

THE IRON AGE

THURSDAY, JANUARY 12, 1893.

A New Rust Preventive.

By accident one of the members of the firm of Edmund Mueller & Mann of Charlottenburg, Germany, discovered a mixture of essential oils and greases which proved to be an excellent rust preventive. The demand led to its manufacture on a larger scale under the name of "Mannocitin," which was adopted by a number of the German Government departments, the post office, state railroads, gun plants and regiments. It has also attained widespread recognition among private manufacturers of machinery, engines and iron and steel. The composition is a thin fluid, which is readily applied by means of a brush. In a short time the essential oils forming a part

time. It was then found that the article was as bright and free from rust as it was on the day the material was put on it.

The Marine Tonnage of Buffalo.

Mayor Bishop of Buffalo in his annual message just delivered states that tonnage of that port far more than doubled in capacity during the last ten years, and that at the present time it must be equal to two-thirds of the foreign trade of London. He says:

In the last message of the President of the United States to Congress, the vessel tonnage of the foreign trade of the port of London is stated to have been 13,480,767

days, not including the large number and miscellaneous imports and exports, was 10 per cent. of the entire foreign trade of the United States for a whole year.

Double Planer.

The Detrick & Harvey Machine Company of Baltimore, Md., are introducing a double planer embodying several new features. The principal characteristic is found in the fact that the machine consists practically of two open side planers, so arranged that they may be used independently as two small planers, or may be combined so as to permit of their employment on work too large for either planer alone.

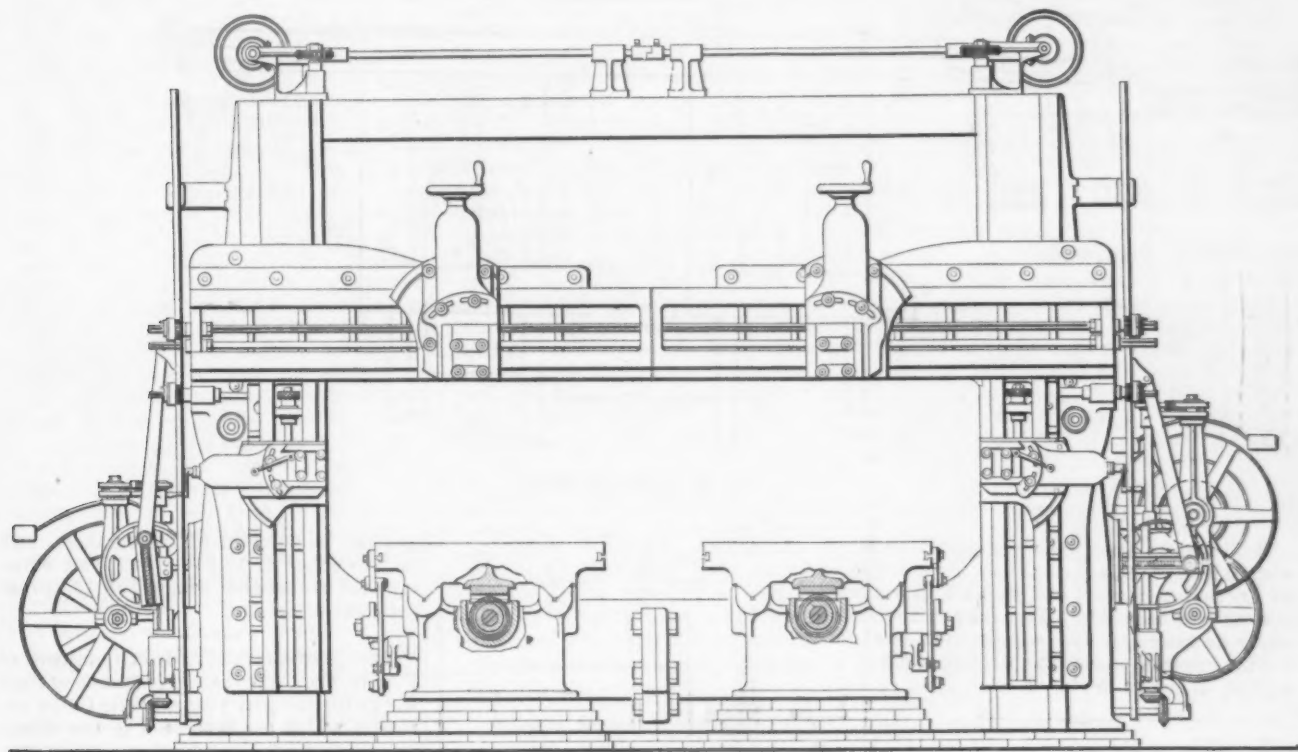


Fig. 1.—Cross Sectional Elevation.

DOUBLE PLANER.

of its composition evaporate and the greases remain behind, forming a coating which protects the polished iron, steel, brass, copper, gun metal or nickel-plated goods against atmospheric influences, and even against the action of sea water. The absence of acid in the composition is alluded to as an important point, nor does it enable acids to form through contact with air or water. We are informed by Vilmar & Goetze of 81 New street, New York, who are agents for this country with the exception of certain States, that the composition, while relatively costly, is economical, because a very small quantity will protect a good deal of surface. It is claimed that the composition does not turn rancid and that it can be readily removed by rubbing with cotton waste wetted with turpentine. It leaves a surface bright and smooth. It has been tested by the purchasing agent of the Illinois Steel Company, Chicago, who exposed a piece of polished steel to the atmosphere for two months, and subsequently kept the same article under shelter for the same length of

tons for the year 1890, and of the foreign trade of the port of Liverpool, in the same year, to have been 10,941,800 tons. These are the two principal ports of the greatest commercial nation of the world, and their wharves and warehouses are busy during all that year, and yet the vessel tonnage of the port of Buffalo, during a season of 246 days, was two-thirds of the tonnage of the foreign trade of London, and only 2,000,000 tons less than that of Liverpool, for the whole year of 1890.

In value, this commerce is no less surprising. In 1891 the value of the flour and grain imported and the coal exported at the port of Buffalo was (according to prices of these articles given in the report of the Merchants' Exchange for the year 1891) more than \$163,000,000. According to the last message of the President, the total value of the foreign trade (exports and imports of merchandise) of the United States in 1891 was \$1,629,397,000. It will thus be seen that the lake commerce of the port of Buffalo in flour, grain and coal alone, for a season of 246

As will be seen by reference to the accompanying drawings, the machine consists of two beds, bolted together as shown in Figs. 1 and 2, and the platens of which are driven by independent gearing arranged as shown in the plan view. There is also a tool carriage for each side. In order to adjust the machine for work too large to be handled by either planer, it is only necessary to substitute one continuous cross rail for the two shown in Fig. 1, when the work may be mounted on the two platens, which move as one, the machine then doing duty as a large planer.

There are comparatively few shops where the work is of such a character as to warrant the purchase of a planer of large size. In the average shop the large planer is at work only at long intervals on jobs of large size, most of the time it being employed on small work, which could be more economically done on a small tool. This planer was introduced in order to meet this demand. The arrangement is such that while it can very easily be adjusted for large jobs, its capacity for small

work is doubled. In other words, the output of the machine on all small work is largely increased, as there are practically two separate and independent planers.

blast. In January, 1892, with 17,207 ovens in the region, 13,570 were in blast and 3,637 were idle. In the latter part of February a gradual decrease began and

came, and in August only 10,409 ovens were in blast. This continued until September, when the iron and steel trade picked up, which was followed by a

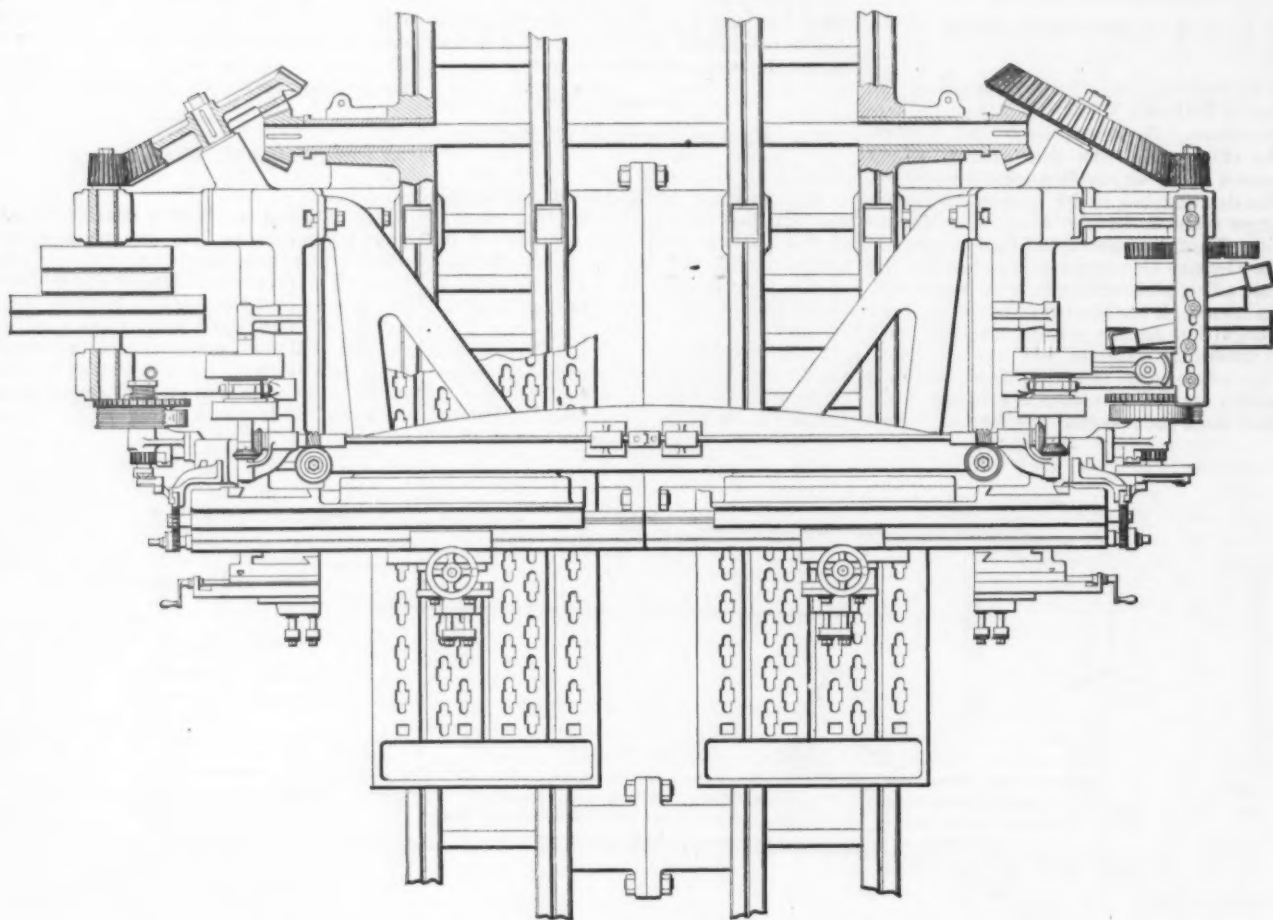


Fig. 2.—Sectional Plan.

Both planers are of the standard type, which has been introduced so favorably by Detrick & Harvey, and with which our readers are familiar. The only change made necessary by this construction was the reversing of one of the driving mechanisms, as shown in Fig. 2.

The output of coke for 1892 in the Connellsville region exceeded all previous years except 1890, which year exceeded all former years. In 1892 6,167,348 tons

general blowing in of the furnaces, and on November 25 13,950 ovens were burning, but the number dropped to 13,246 at the close of the year.

The Colorado Coal & Iron Company of Pueblo, Col., have had in operation at their works for the past year a Davis-Colby ore roaster which has been used in the desulphurization of their local magnetic ore. The uniformly good results obtained by this roaster, including the low cost per ton of roasting, has warranted the Colorado

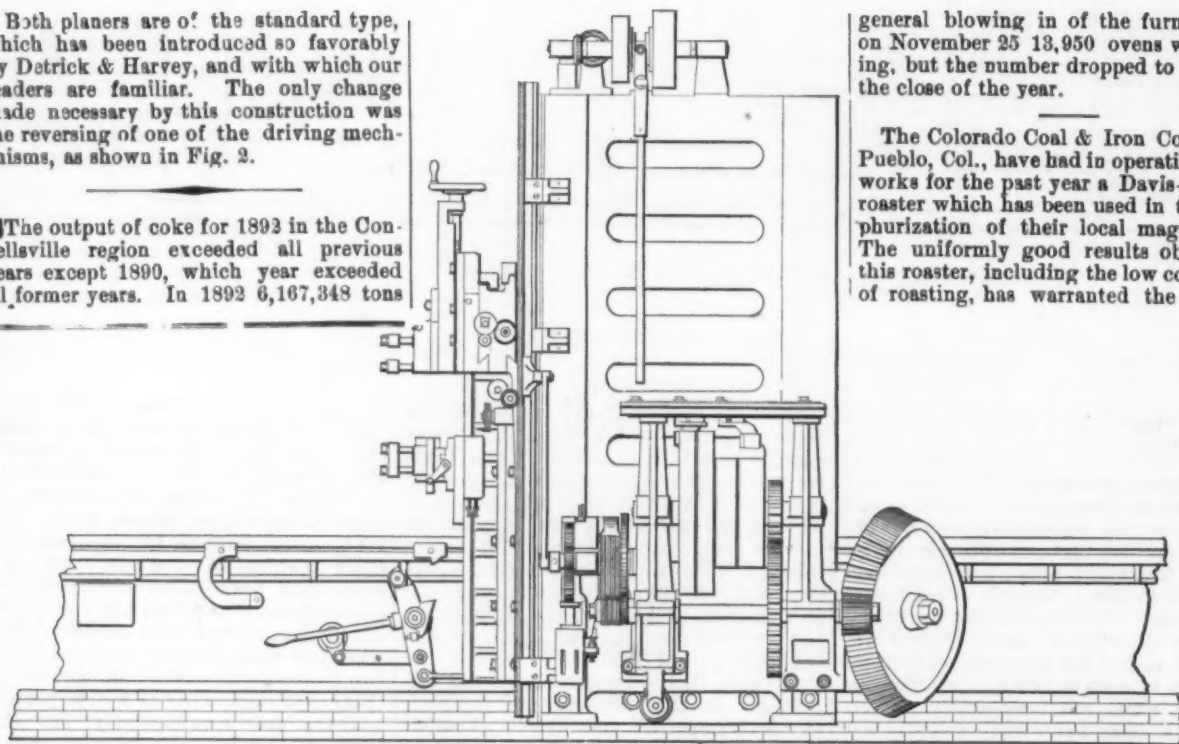


Fig. 3.—Side Elevation.

DOUBLE PLANER.

of coke were produced at a value of \$11,179,961. The year as a whole was productive of good results, although a large per cent. of the ovens were not in

continued until June 1, when only 11,080 ovens were in blast. There was a spurt in July, and stocks that had accumulated were cleared up, when another depression

Company in erecting a second kiln, which is now about completed. The erection of several additional kilns is also projected at this time.

THE MESABI IRON RANGE.—III.*

BY HORACE V. WINCHELL.

Mines Now Opened Up.

Biwabik.—After the discovery of the Mountain Iron Mine in 1890, described in the first portion of this article, no further discoveries of importance were made until about a year later, when an explorer named John McCaskill saw traces of soft ore in the roots of an overturned tree in section three, T. 58-16. This led to the discovery of the Biwabik, Cincinnati, Canton, Hale and Kanawha mines. Credit for the actual discovery of the ore deposit on the Biwabik must be given to Capt. J. A. Nichols. He directed the work which succeeded in making this discovery in August, 1891. Capt. J. G. Cohoe was put in charge of the work here and sunk 15 test pits during the winter of 1891-92. It would be somewhat peculiar if the first and second mines to be discovered should turn out to be the best two mines on the range.

In the last part of April the Bibawik Mountain Iron Company leased three forty sections two and three, T. 58-16, to P. L. Kimberley of Sharon, Pa. The lessees are required to mine at least 300,000 tons per annum and to pay a royalty of 50 cents per ton. This deal was the result of an examination of the early developments on the range made by J. T. Jones, the superintendent of the Hamilton Ore Company of Iron Mountain, Mich. Work of exploration was continued in a systematic manner and soon became the model for such work on the range. The test pits were rapidly increased in depth and number, and the result showed the wisdom and foresight of Messrs. Jones and Kimberley in the selection of this property out of all those so far discovered on the range. Records of some of their test pits may be seen on page 138. By the time these test pits were completed it was evident to the unprejudiced observer that here is the greatest deposit of ore known on the range if not in the whole Lake Superior district.

Millions of tons of soft hematite, averaging 63 per cent. iron and .045 phosphorus, are here found within 100 feet of the surface of the ground. It is safe to say that this mine under its present management will eclipse all former records for cost of mining and number of tons produced in a given length of time. There may yet be larger deposits found on the Mesabi, but so far the Biwabik is chief. The Mountain Iron may prove to be its equal, and at present is a good second, but the number of cubic feet of ore reasonably to be estimated as "in sight" at the Biwabik exceeds that of any two other mines yet opened up.

Cincinnati.—Adjoining the Biwabik on the east is the Cincinnati. This is also a fine property. It does not seem to get the credit it deserves among those familiar with the range, perhaps because it happens to suffer somewhat in comparison with the Biwabik adjoining, which is a larger property and has been more extensively developed. For several months no property on the range could make a better showing as to quantity and quality of ore than the Cincinnati. Subsequent development revealed others equally as good, but that was only to be expected. Later development on this property also showed the ore to be more extensive than the owners themselves believed it originally.

This mine is leased to the Standard Ore Company, who have agreed to mine at

least 150,000 tons each year at a royalty of 55 cents per ton.

The development of this property was largely under the charge of Capt. Edward Florada and Captain Carlin.

Canton.—This property, owned by the Minnesota Exploration Company, lies on the west side of the Biwabik. The ore here was discovered by Mr. Edgar Brown. Much of it is non-Bessemer goethite. It is probable that there is better ore to be found here at a greater depth. Work is now being vigorously prosecuted under the direction of President D. H. Bacon of the Minnesota Iron Company.

Kanawha and Hale.—The Kanawha Iron Company did considerable exploration work in the S. E. $\frac{1}{4}$ N. W. $\frac{1}{4}$ section 1, T. 58-16, in April, 1892, and found a considerable depth of ore in a series of test pits located east and west along the north side of the forty. The width of the deposit is not yet proven to be great here, the ore appearing to lie in a rather narrow gorge.

Pit No. 1 went through the ore at the depth of 38 feet into an unaltered portion of the taconite. On this property and the Hale, which lies just to the east, the fact is plainly shown that the drainage slope considered necessary to facilitate the replacement process does not always consist of the rocks of the Taconic formation above the ore deposit itself. The flow of waters which has accomplished the replacement and concentration may have come from a ridge of Keewatin green schist or Archæan granite. At this place there are two pits 50 feet apart, one in 55 feet of ore and the other in green schist. The schist is the same as that seen elsewhere on the range and lies unconformably beneath the Taconic rocks. It dips here N. 85°, while the dip of the ore is S. 10°. The ore occupies a gorge at the contact line between the two formations. The same deposit in the same relative position extends eastward across the Hale Forty. The bare ridges of green schist rise much higher northward, and drainage is off the schist ridges into the valley in which the ore is found. The fact that the ore on these two properties is largely a non-Bessemer goethite is an indication that the replacement is not so perfect in this situation as when the entire slope is composed of the Taconic iron formation.

Missabe Mountain.—A pit located with very good judgment by Capt. J. G. Cohoe, one of the earliest and best explorers on the range, encountered ore on this property, N. E. $\frac{1}{4}$ section 8, T. 58-17, in the first pit sunk, at the depth of 13 feet. This was the last of March, 1892. The first ore discovered in this township was on this property. Other pits in the same land revealed a large deposit of ore of good quality, and in about four months a lease was made to H. W. Oliver of Pittsburgh, on a guaranteed output of 400,000 tons annually, at the high royalty of 65 cents per ton. The income of this company is thus assured to be more than a quarter of a million of dollars from this property alone. An advance royalty of \$75,000 was paid by Mr. Oliver. So quickly are iron mines developed and turned into cash on the Mesabi.

Ohio.—The Ohio Iron Company moved their workmen to the corner of their property nearest the first pit on the Missabe Mountain in April, and were rewarded by finding soft blue hematite of excellent quality in several pits. Early in June this property was leased to James Sheridan of Duluth and others, who agreed to pay \$97,500 a year in royalties at the rate of 65 cents per ton.

Lake Superior.—In February or March ore was found in the northeast quarter of

section 22, T. 58-20, on the land of the Lake Superior Iron Company. This was the fourth township in which ore had been found and its discovery added greatly to the already intense excitement in Duluth. The statement was often made that the whole country was full of iron ore and that a test pit could hardly fail to find it. Some were of the opinion that iron ore would be so abundant as to be worthless, and that the mines were equally so. It is needless to say that this opinion was held by those who were ignorant of the immense consumption of iron in this country. It is also superfluous to add that this idea was exaggerated beyond all bounds.

Several test pits found ore on the property of this company, both at the first location and at another farther west. As yet no sublease has been made by this corporation, and their intention may be to do their own mining.

At the Mountain Iron mine the quartzite is underlain by granite, as it is also at the Lake Superior.

New England.—In May a fine body of ore was discovered by John Owens on the property of the New England Iron Company, N. W. $\frac{1}{4}$ N. W. $\frac{1}{4}$ section 9, T. 58-17. Later developments have shown the existence of nearly 40 acres of ore, and most of it is the peculiar soft blue ore, which is the best on the range. In August this property was subleased to Capt. N. D. Moore and others at a royalty of 55 cents per ton and an advance royalty of \$50,000. This company controls other lands favorably situated for the existence of merchantable ore bodies.

Virginia.—The Virginia Iron Company also found ore in the N. E. $\frac{1}{4}$ S. E. $\frac{1}{4}$ section 8, T. 58-17, during the month of May. This property was leased in August for a valuable consideration. A number of test pits indicate that there is ore over a large area on the land of this company. Like the New England, Wyoming, Lone Jack, Kanawha and others, it belongs chiefly to A. E. Humphreys & Co., who were fortunate in their selection of lands and who spared no expense in the rapid and thorough exploration of them. The phenomenally quick development of the new range is due perhaps more largely to their efforts than to those of any other single firm or individual. Their confidence in the district and their earnest efforts to develop it deserve abundant thanks and reward.

"Paddock's."—Ore was found on the S. W. $\frac{1}{4}$ N. E. $\frac{1}{4}$ section 3, T. 58-18, east of the Mountain Iron Mine, in May. This was the second property in this township to show a good body of ore. The glacial drift here exceeds 50 feet in depth and water is troublesome, but the body of merchantable ore appears to be of considerable extent.

Lone Jack, Wyoming, Security, Great Western Rouchleau.—Along in May ore was found on the above properties, all situated in T. 58-17. There is a large bend in the green schist ridge in this township and the largest group of mines on the range is situated on the flanks of this loop or bend. As will be seen from the map, these mines follow the curving line of the greenstone ridge, and occur on its flanks, irrespective of the direction it may happen to assume.

There is, however, one peculiar occurrence on the Lone Jack and Missabe Mountain to which reference has already been made.

There appears to be a pre-glacial gorge formerly excavated by some stream flowing in a westerly direction down from the green schist ridge across the Lone Jack and Missabe Mountain into the valley in the southwest part of the township. This gorge was in some way filled with gravel, at the present time composed principally

* From the Twentieth Annual Report, Minnesota Geological Survey.

of round, water-worn fragments of hard ore. The drift mantle was subsequently spread over the top of the filled gorge and the ore on both sides of it. At the bottom of this gravel-filled gorge is a stratified layer of light colored kaolinic material which varies in thickness from a few inches to 12 feet. Beneath this stratum of kaolin is soft blue hematite similar to that found by test pits north and south of the supposed gorge on both the Lone Jack and Missabe Mountain. The depth of this ore gravel in the gorge is more than 60 feet. The test pits sunk on both sides of it encounter ore at the depth of from 8 to 15 feet as the thickness of the drift varies. The so-called ore gravel is mostly hard, dark-colored hematite and is cemented by a soft ferruginous paste containing more or less of the kaolinic matter. It is not certain that this gravel was ore when it was deposited in its present position, but it does appear likely that it is not a constituent part of the Taconic strata. The fine deposit of kaolin which separates it from the blue ore below and on the sides was perhaps derived from the detritus of the feldspathic green schist, although it is similar to material found elsewhere at the base or lower edge of deposits of ore, and may thus be a product of chemical alteration *in situ*.

McKinley.—In December, 1891, ore was found on the McKinley, N. W. $\frac{1}{4}$ S. E. $\frac{1}{4}$ section 8, T. 58-16. During January work progressed rapidly under the direction of D. McKinley. Three pits were sunk in good soft blue hematite. Having proven the existence of a good mine here work ceased until railroad facilities could be obtained before the full extent of the deposit was revealed. The property is a large one and there is abundant opportunity for a very fine deposit of ore.

During the winter of 1891-'92 work was vigorously prosecuted on all these properties, and the discovery of such a large amount of ore produced quite an excitement in Duluth and among Northwestern iron miners in the months of January, February and March, 1892. Many new companies with a very large capital stock were organized, and the work of searching for iron deposits was begun in dozens of camps in the dead of winter. Log camps were erected and tons of supplies were taken on runners to the various locations west of Mesaba station on the Duluth & Iron Range Railroad. The organization of these companies was a matter of speculation. The lands were held under State or private lease at a royalty of 25 or 30 cents per ton, or in fee, and were selected without any knowledge of the region or the properties or the possibility of the discovery of ore thereon. It was to be expected that many companies would be disappointed in the search for ore and that the expense of operating would soon drain the exchequers of others. This was in fact the case, but it must be admitted that the number of successful ones was surprisingly large.

Other Discoveries of Ore.—There are authentic reports of the discovery of merchantable ore in townships 58-20, 58-21 and 57-23, on the lands of the Washington, Mesabi Chief and Lake Superior Iron companies, as well as on land under lease to J. M. Longyear. These have not been visited recently by the writer. Neither has the Diamond Mine in 56-24. This mine has been operated for several years under the superintendence of E. W. Griffin of Minneapolis. The results were not at first satisfactory, and considerable trouble was experienced with water. It is reported that the work is at present being conducted in a body of good soft ore. The Gunflint Lake Iron Company, under the direction of John Paulson, is preparing to mine the magnetic ore on the eastern end of the Mesabi Range in township

64-5. The Port Arthur, Duluth & Western railroad is in operation to a point near these deposits.

List of Sub-Leases Already Made.

Mine.	Royalty.	Advance Royalty.	Minimum output, tons.
Cincinnati.—To Standard Ore Company.....	\$0.55	\$25,000	150,000
Biwabik.—To P. L. Kimberley.....	.50	.....	300,000
Biwabik.—To Berringer et al.....	.50	.....	*100,000
Virginia.—To Weimer et al.....	.50	25,000	50,000
Wyoming.—To A. J. Decker.....	.30	40,000	25,000
Wyoming.—To J. T. Jones.....	.50	.....	25,000
Wyoming.—To Parkersburg Iron Company.....	.50	30,000	50,000
New England.—To N. D. Moore.....	.55	50,000	150,000
New England.—To J. B. Weimer.....	.50	25,000	50,000
Lone Jack.—To Moore & Foley.....	.65	.....	50,000
Missabe Mountain.—To H. W. Oliver.....	.65	75,000	400,000
Ohio.—To Jas. Sheridan et al.....	.60	.....	150,000
Hale.—To F. A. Bates and H. P. Barbour.....	.50 & .40	.....	50,000
Total.....			1,550,000

*50,000 tons each alternate year.

If the cost of mining is 25 cents the approximate cost of the ore delivered at Cleveland will be \$3.10, distributed as follows:

Cost of mining.....	\$0.25
Royalty.....	.60
Railroad freight to the lake.....	.80
Lake freight to Cleveland.....	1.30
Insurance, commission, &c.....	.25
	\$3.10

These items will vary somewhat. The lake tariff at present is but \$1 to Cleveland, and in some cases the last item will be only 15 cents. The royalty, too, will vary, and will average less than 60 cents. Different methods of mining will vary in expense. The above estimate is for mining by steam shovels and stripping off the surface. If the method of underground mining is adopted the cost will exceed the figure given above.

The average price for 60 per cent. Bessemer ore is not far from \$4.25 at Cleveland. If the large amount of Mesabi ore made suddenly available should force the price down to \$3.75 per ton, there will still be a profit for the average Mesabi mine operator.

Quantity of Ore on the Mesabi.

How much ore is there on the new range? How long will it last? These are questions of importance and are frequently asked. The answer must be in the nature of an estimate at present. Different experts of equal skill would arrive at different results in an attempt to compute the ore in sight. Figures that represented anything like the truth, even though they were made by a competent and disinterested person, would be received with incredulity by those not familiar with the actual developments. Besides, there is no doubt that much more ore will yet be discovered; how much is merely a matter of speculation. Hardly a week passes now without the announcement of a new find, and new areas are continually being tested and found productive on the properties already under development. The Biwabik Company have quite recently been presented with another mine on section 36, T. 56-18, by the good judgment and industry of their explorer, Capt. J. G. Cohoe. The number of known merchantable deposits already exceeds 20, and many other promising localities have not yet been explored.

It is evident that there is ore in store for many years to come, and that permanent investments and improvements of the most extensive nature can safely be made, based on an expectation of the sufficiency and quality of this ore supply. As

already stated, contracts have been made calling for the minimum production of 1,500,000 tons per annum. This is 80 per cent. more than has ever been produced by the Vermilion range in one season, and is about one-sixth of the entire Lake Superior product. The yield of some of the largest mines, like the Mountain Iron, McKinley and Lake Superior, is not included in this minimum figure, nor are some others like the Canton, Kanawha and Great Western. It is, moreover, likely that some companies will ship more than their minimum amount. It may not be within the first two years, but after they are quite ready.

Transportation.

Extensive railroad and vessel equipments are necessary for handling the product of an iron range. It seems rather questionable whether the railroads running to the Mesabi will be able to handle the ore which will be offered them in 1893. The iron mines are situated 60 to 80 miles from Lake Superior. At the beginning of 1892 there was but one railroad, the Duluth & Iron Range, which crossed the Mesabi, and that was 12 miles from the nearest mine. The Duluth & Winnipeg, in running west from Duluth, formed an acute angle with the Iron Range and crossed it at Grand Rapids, on the Mississippi River. During the first nine months of this year, however, two roads were constructed and put in daily operation between Duluth and the new range.

The first road completed was the Duluth, Missabe & Northern. From the Duluth & Winnipeg at Stony Brook this road runs north over a level, drift-covered region for 42 miles to the Mountain Iron Mine. The roadbed is excellent, and curves and grades being few the operating expenses will be light. It was chiefly through the efforts of the late M. B. Harrison, Leonidas Merritt, K. D. Chase and Donald Grant that this road was built. It was put in operation during the first week in October. By its contracts with the owners and lessees of several of the largest mines this railroad is already assured of large business. A considerable number of ore cars and heavy locomotives are now being constructed for this company.

The ore brought down over the Duluth, Missabe & Northern will be handled by the Duluth & Winnipeg between Stony Brook and the docks on Allouez Bay. This road will also handle ore which will be delivered to them by other branch roads to be constructed farther west. One of these roads is now being built by the Swan River Logging Company from the crossing of Swan River to the mines in townships 57-22 and 58-20.

The Duluth & Iron Range branch to the Biwabik, Canton and other mines near the town of Merritt was also completed in October, 1892. In spite of many serious natural obstacles, such as heavy grades, this road has as fine a track and equipment and is as well managed as any road in the State. Its traffic is already large from the Vermilion Range, and will manifestly be increased by the large output of the Mesabi. It is expected that both the Iron Range and Missabe & Northern will construct lines along the range connecting the various towns and mines.

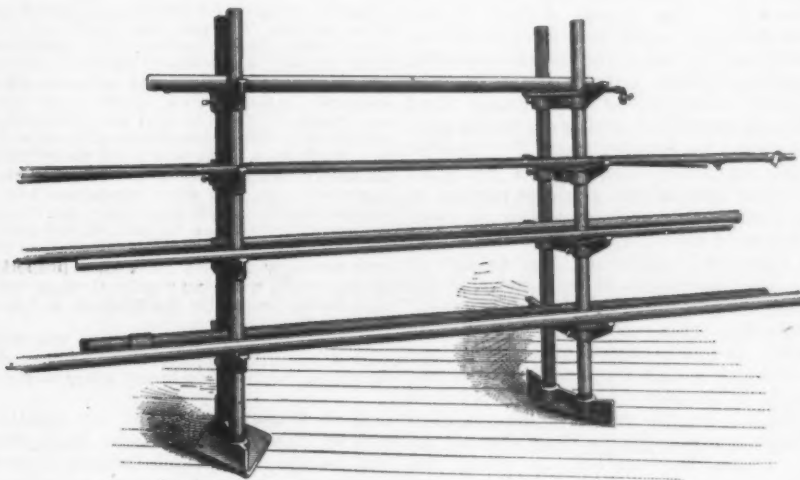
Announcement is made that a conference will shortly be held between officials of the Amalgamated Association of Iron and Steel Workers and of the National Finishers' Union to discuss the differences which have existed for so long between these two labor organizations. In some quarters the prediction has been made that if this conference is held it will result in the abandonment of the National Finishers' Union and the return of the members to the Amalgamated Association.

Pipe and Bar Stock Rack.

The Builders' Iron Foundry of Providence, R. I., have placed on the market the stock rack for conveniently arranging pipes and bar iron, here illustrated. Screwed into a cast-iron base are two pipes adapted to receive cast-iron cross pieces, which are held at any desired height by set screws. This provides at each cross piece three shelves, if we may use the term, two outside and one between the bars, for receiving the stock. By means of this simple rack, pipes and bar iron can be arranged so as to be conveniently handled, and the spaces between the cross pieces can be so adjusted as to meet the requirements of the different kinds of stock carried. The cross pieces are made in several sizes in order to adapt the rack to large or small stock.

The Foundrymen's Association.

The twentieth meeting of the Foundrymen's Association was held at the Manufacturers' Club, 1409 Walnut street, Philadelphia, January 4, at 8 o'clock p.m.



PIPE AND BAR STOCK RACK.

In the absence of the president and vice-president, P. D. Wanner of the Mellert Foundry & Machine Company, Limited, Reading, Pa., was chosen chairman of the meeting.

The minutes of the last meeting were read and adopted.

The following persons were present:

Albert E. Hay of Robinson Machine Company, Altoona.

Clemens Jones, Easton.

Isaac P. Chalfant of Chalfant Mfg. Company, Lancaster.

Wm. Green, Jr., of Vulcan Works, Chester.

Henry Rubland of Henry Rubland & Co., W. C. Henderson of Thos. Devlin & Co., A. W. Howe and Stanley G. Flagg, Jr., of Stanley G. Flagg & Co., L. B. Whitney and Asa Whitney of A. Whitney & Sons, Ed. Bureau of Bureau Bros., E. E. Brown of E. E. Brown & Co., Geo. B. Wood of R. D. Wood & Co., Harry Redmann of G. Redmann & Co., P. Kearns of Stuart Peterson Company, Geo. C. Davies of Chamberlain, Turney & Baird, J. H. Julien of J. W. Hoffman & Co., Howard Evans of J. W. Paxson & Co., all of Philadelphia.

L. S. Wright of Camden Iron Works, Camden, N. J.

James T. Sterling of Harlan & Hollingsworth Company, Wilmington, Del.

Leslie Griscom of Pennsylvania Diamond Drill & Mfg. Company, Birdsboro.

H. J. Herb of Adam Johnston & Son, Reading.

Geo. A. Messick of Pusey & Jones Company, Wilmington, Del.

J. Ogden Hoffman of Frick Coke Company, Pittsburgh.

Andrew McCardell of Pond Machine Tool Company, Plainfield, N. J.

G. T. Marsh, superintendent South Baltimore Foundry.

E. M. Mumford of H. R. Worthington, Elizabethport, N. J.

P. D. Wanner of Mellert Foundry & Machine Company, Reading.

Fred H. Eaton, vice-president Jackson & Woodin Mfg. Company, Berwick, Pa.

The Executive Committee made a report of their meeting, stating that they had decided to send a list of the castings which were presented at the December meeting to the members of the association and others, requesting that they send to the secretary prices for the different castings, f.o.b. at the respective shops, patterns, flasks and core boxes being furnished. It was also decided that samples of coke, with analysis of the same, be presented at the January meeting, so that a discussion may take place on that subject. The

secretary stated that he had made arrangements with Mr. Clemens Jones, M.E., late chemist of the Thomas Iron Company, to address the association at the January meeting on the subject of "The Relations of Chemistry to Foundry."

The Railroad and Freight Committee stated that they had attended the meeting at the Manufacturers' Club on December 14, looking toward the formation of a Philadelphia Transportation Bureau, to be composed of 12 different Philadelphia organizations who are at present interested in this matter, the object being to form a grand organization with a wider scope than is existing at the present time, with headquarters at the Manufacturers' Club. A prolonged discussion took place upon this matter, and it was finally decided that this conference deem it expedient to postpone for the present the formation of a general freight bureau. The committee reported progress.

The following new members were then elected: *The Iron Age* of New York, with Thomas Hobson as agent of 220 South Fourth street, Philadelphia; Rogers, Brown & Co., J. M. Warner, manager, pig iron, Builitt Building, Philadelphia; Yale & Towne Mfg. Company, manufacturers of cranes and foundry; H. R. Towne, president, Stamford, Conn.

The bids on castings, which were presented at the last meeting, were opened and read, and it was found that there was

a vast difference in the prices offered, the figures from the West being lower than those of the Eastern shops. Each bidder was designated by the town in which he was situated, so that names were not used, the feeling being that it was proper to do so, because otherwise information given in confidence might be given away. A discussion took place as to whether it would be best to present other castings and get prices, or whether it would be acceptable to have the association solicit direct from customers orders for castings, having them read before the association and ask for actual bids. It was then left in the hands of the Executive Committee for further action.

Samples of coke were presented with analyses, and a discussion took place on that subject, but the time being limited, was postponed until the next meeting in February.

The chairman of this meeting then proposed a subject which he thought would be of interest to all foundrymen, which was to appoint a committee to report at each meeting current prices at which castings are sold in different parts of the country, the object being to find out as nearly as possible about the price at which castings are being sold. This seemed to be acceptable, and at the next meeting it is expected that all members or others may report any contracts for castings that they might have heard of, together with the price at which they were taken, when a further discussion will be held.

Clemens Jones, M.E., late chemist of the Thomas Iron Company, then made an address upon the subject of "The Relation of Chemistry to Foundry." A vote of thanks was extended to Mr. Jones for the very able manner in which he handled this subject, and the address was ordered to be printed and distributed. The matter contained in this address would seem to show conclusively that chemistry can be better depended upon in foundry practice than the usual plans adopted, and that it was possible, by chemical analysis, to determine the quality of castings and strength, &c., almost to a certainty by a proper mixture, whose chemical analysis is known before it enters the cupola, and that as a rule the analysis, as given by the different parties making iron, could be depended upon implicitly. If the foundrymen would send their orders to the furnacemen for iron with specifications that it should contain certain percentages of carbon, silica, &c., that the furnacemen could furnish it without difficulty.

The minutes are signed by Howard Evans, Secretary.

At Pittsburgh last week the first of the riot cases resulting from the strike at the Homestead Steel Works last summer was taken up in the criminal courts in that city. This case grew out of the riots that occurred at the Duquesne Steel Works on August 4 last, when a crowd surrounded the plant and prevented men from returning to work, as a number of them had decided to do, in the belief that the strike, which was inaugurated in sympathy with the Homestead men, was a failure. Twenty-seven men were indicted for riot for their connection with the affair, but only 13 appeared for trial, as a number have never been arrested. Two of the men who appeared for trial were employed at the Homestead Steel Works and the other 11 were employed at the Duquesne Steel Works. A verdict in the case will be rendered some time during this week.

The Supreme Court of Pennsylvania on an appeal decided that strikers must not interfere with non-union workmen. The case was that of striking printers in Pittsburgh.

A Plan for Locomotive Building Shops.

At a meeting of the New York Railroad Club, held October 27 last, M. N. Forney, editor of the *American Engineer and Railroad Journal*, to whose courtesy we are indebted for the engraving here presented, read a paper on a proposed plan for shops for building and repairing locomotives. The reasons for recommending the proposed plan are given in the paper as below:

The following seem to be the principal considerations which should govern the arrangement of shops in relation to each other:

1. Facility in moving material to and from them.
2. Facility of access from one shop to another. This should be in proportion to the amount of intercourse between them.
3. Materials should always be moved in the direction of their destination, and not backward and forward over the same route.
4. Safety from fire.
5. Facility of supervision.
6. Amount of railroad track required.
7. Facility of drainage.

These considerations will be taken up in the order in which they are named.

One of the chief problems of transportation in locomotive shops is how to move boilers, locomotives partly or completely finished, tenders, trucks and wheels from one shop to another, or from one part of a shop to another part. To do this a transfer table is usually employed. The impression is very general that such a table affords the most satisfactory means of transferring boilers, locomotives, &c., from one shop or part of shop to another. As there are some very grave objections to transfer tables, and as locomotives and their parts may be handled with equal or greater facility with other means, some consideration will be given to the subject here.

Under any and all circumstances a transfer table is the cause of a great deal of inconvenience. A pit of greater or lesser extent is required. This is an obstacle in the way of communication from one side to another. A wheelbarrow cannot be wheeled across it, nor a wagon and horse driven over it excepting on the table, which can only be at one place at a time. Walking across the pit is uncomfortable, especially when the hinges of the knee lack the lubrication of youth. Unless thoroughly drained, water accumulates in the pit when it rains, and it is filled with snow in winter, and is a receptacle of rubbish at all times, and, excepting for the one purpose which it is intended to serve, it is a perpetual obstruction to free intercourse between some of the shops and a nuisance generally. Happily, since the introduction of traveling cranes transfer tables are not essential, if there is room enough to lay out the shops as may be desired. Boilers and engines can be moved inside the erecting shops with equal or greater facility with such cranes than they can be with the aid of a transfer table, with the added advantage that a great deal of work can be done or facilitated by traveling cranes which cannot be done by a transfer table.

If three tracks are arranged longitudinally in the erecting shop, with pits below the two outside tracks only, and the middle one is kept clear, the movement of the boiler and engines, and the handling of their parts by the traveling crane are very much facilitated.

By connecting the middle track with a turntable outside of the shops, and then arranging the other buildings so that each of them may be connected with the turntable, the transfer table, with all its inconveniences, may be dispensed with.

Such an arrangement is shown in the plan herewith. In this the buildings are grouped around a central turntable, which

is connected directly with each of the shops, excepting the smith shop and foundry, by a separate track.

The materials for the smith shop and foundry are delivered from side tracks connected with the main line, as shown.

Besides those already mentioned, a transfer table has the added disadvantage that separate power, either electric or steam, and an attendant are required to run it, whereas a turntable does not require either power or attendant, excepting the person or persons who use it. A turntable can be used at all times, either Sundays or holidays or nights, whereas a transfer table requires either steam power or electricity to run it.

With reference to the cost of the two systems, it may be said that a 60-foot turntable without track, pit or masonry, will cost \$1,500. The carriage for a 40-foot transfer table will cost \$1,200, but the track, pit and masonry for the transfer table will cost considerably more than the corresponding portions of a turntable, so that of the two the turntable will be the cheaper.

With reference to traveling cranes, it may be said that probably no one acquainted with the uses of these appliances would recommend building an erecting shop without one or more of them, if it is intended to do work in it in the most expeditious way and at the lowest total cost, counting interest and all other charges. To serve their purpose fully, cranes must be made capable of lifting engines so as to put their wheels under them. If transverse tracks are used, engines must be lifted with one crane whose girder is parallel to the tracks and travels crosswise to them, and it must have two trolleys and a capacity equal to or exceeding the weights of the heaviest engines to be lifted. If the tracks are longitudinal, the cranes extend across the track and travel parallel to them, and two cranes, each with one trolley and a capacity equal to half the weight of the heaviest engine, are required to lift it. As the concentrated weight of a single crane is greater than that of the two cranes, the structure on which the latter run may be lighter than is required for the single crane, so that probably the total cost of two light cranes and their supporting structures will be little if any greater than that of the single crane.

The use of two cranes has also the advantage that when not employed in lifting engines they can each be used simultaneously in doing other work in different parts of the shop, whereas one crane can be used at one place only.

It will also be shown further on that if the machine shops and machinery are arranged as contemplated in this paper, the cranes in the erecting shops can also be used for serving some if not all of the heavy machine tools.

It has been suggested that a single light crane may be used for handling the parts of locomotives in an erecting shop with transverse tracks. It is doubtful whether any one who has ever seen the facility with which locomotives can be handled with cranes in an erecting shop would propose the use of appliances of that kind which would be too light to lift the heaviest locomotive. It is safe to say that the time required to do work with cranes would be counted by minutes, whereas if done without cranes it would be counted by hours.

The work done and the labor saved by the use of cranes in erecting shops is not, however, confined to lifting engines and boilers. In practice, in shops equipped with these appliances, every piece too heavy for a man to lift is handled with cranes, with a great saving of labor and time. As evidence of this I submit the following letter from Joel West, master mechanic of the West Burlington shops of the Chicago, Burlington & Quincy Railroad, which are provided with cranes:

DEAR SIR—Some of the advantages of an erecting shop constructed with overhead cranes and longitudinal tracks in place of transverse pits, in my mind, are as follows:

All the material for the erecting of an engine can be brought from the finishing shops on rubble cars over small turntables and delivered at either end of the erecting shop, and the rubble car with its load can be picked up and taken to the point where the engine is to be erected, and each part can be handled from the rubble car directly on the engine; the engine frames and cylinders can be all bolted up and the boilers brought in in the same way from the boiler shop, and carried and dropped in place after the frames and cylinders are all ready for the boiler, and all parts of the engine can be put into their places and the engine picked up as a whole, carried and set down at either end of the shop, with water and steam put into the engine from a battery of stationary boilers, so that the engine is ready to go when she is set down at the door. If desired, as the engine progresses in her construction, she can be picked up in any stage of the erection and carried to any other part of the shop for the different men that are erecting the different parts. This avoids all outside transfer pits, which are very expensive in this country, from being blocked with snow, and puts all the transfer work inside of the shop, where it is comfortable in all kinds of weather for men to work. It avoids a great many expensive side doors in a shop; makes a shop much warmer in winter and gives room where these doors would be located for work benches, heating apparatus, &c. I consider an overhead crane an indispensable necessity for handling all heavy parts of an engine. Two men can handle the cylinders, frames, decks, boilers, cabs, sand boxes, dome casing, smoke stack and the like, and put them in their places with all ease. In our shops we do not use jack screws of any kind; an overhead crane is also an indispensable article in a tank shop, frame shop as well as in a truck shop. It saves a great many tracks, as trucks can as well be put in on a floor as anywhere else, and when completed can be carried to any track where they are wanted. Overhead cranes can be used in any part of the shop, while all such arrangements as drop pits can only be used for a small proportion of the work, while an overhead crane can be used for the largest or the smallest, and is not in the way of any one.

I think that any one who sees the workings of an overhead crane in an erecting shop would not build a shop in any other way.

If it is contemplated to do repairs as well as new work in shops, such cranes will be especially useful, because in doing repair work locomotives must be taken off as well as put on their wheels, and the different parts must be taken down as well as put up.

Testimony to show the economy of time and labor in erecting locomotives by means of traveling cranes might be extended almost indefinitely. After diligent inquiry the writer has failed to find any one who has had experience in their use who has not been an earnest advocate of them.

The opponents of the system, as far as the writer's experience goes, are found only among those who have no practical knowledge of its advantages.

It may be added that, so far as convenience or facility of doing work is concerned, other things being equal, it makes no difference whether erecting tracks are longitudinal or transverse.

As already explained, the erecting shops should be provided with three tracks from 20 to 24 feet apart between centers, and with about 10 to 12 feet clear from centers of outside tracks to the supporting posts of the traveling cranes. The two outer tracks should have pits, but the middle one should be without. The work of erecting is done in the outer tracks alone, the inner one being kept clear for the movement of material either with the cranes or by trucks.

These reasons have led to the recommendation of an erecting shop with longitudinal instead of transverse tracks, and an arrangement of shops whose tracks communicate with each other by means of a central turntable, as shown in the plan herewith.

With the space specified between tracks the width of such an erecting shop will be from 60 to 72 feet clear inside. The width

given in the plan is 70 feet to the outside of crane posts.

There should be room for six engines on the erecting tracks, and not less than 40 feet length of track should be allotted to each engine. Those on each side track would occupy 120 feet of the length of the shop, and if room is given on those tracks for repairing the same number of engines at the same time, 240 feet in length of shop would be required.

The erecting shop represented in the plan is 300 feet long. This not only gives standing room for 12 engines in the erecting tracks, but leaves 50 or 60 feet of the length of the shop in which it is proposed to locate some of the heavy tools at A and B. The floor area of the shop is greater than the calculations show will be needed, but the additional room is provided to give space for doing repair work.

The second and third considerations which should govern the arrangements of

gives the greatest possible facility of intercourse between the machine shops and the erecting shops.

Suitable elevators must be provided for raising and lowering the work to or from the galleries. The floors of the galleries are supported from the roof, which leaves the lower floor clear of obstructions.

The heaviest tools may be located at A and B in the north end of the erecting shop, as indicated in the plan. In these two positions they can be served by the traveling cranes in the erecting shop. Balconies, either movable or fixed, may project from the galleries to receive work which is handled by the cranes.

The smith shop, it will be seen, is located on one side of the erecting and machine shops, and the foundry or the other. The distance—95 feet—between the machine shops may be greater than is required, but can be reduced when the buildings are laid out on the ground. If it is reduced, the radii of the curves

facility of observation from the office is regarded as a matter of some importance.

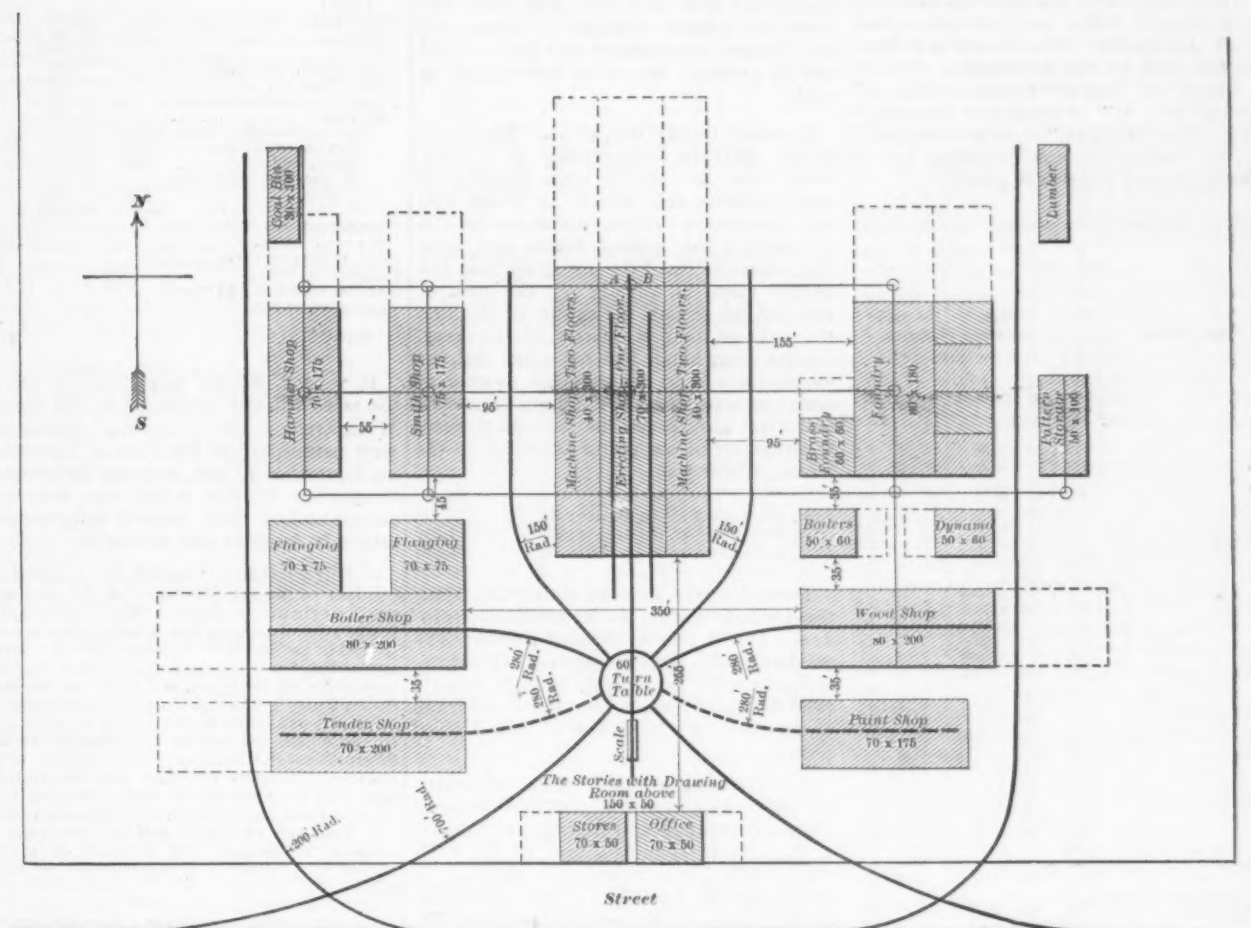
With this arrangement proposed, work will always be moved toward its destination, and material can conveniently be delivered at any required point.

The buildings are all more than 30 feet apart. No reduction in insurance can be obtained by locating them further apart.

The amount of track required outside of the buildings is about 2900 feet, and only three switches are needed to connect the branches with the main track. The drainage can all be conducted to a central drain running either north and south or east and west.

The total floor area of the buildings is as follows:

	Square feet.
Erecting shops, 70 x 300.....	21,000
Two machine shops, two floors each, 40 x 300.....	48,000
Foundry, 80 x 180.....	14,400
Cupola, sand house, &c., 60 x 180.....	10,800
Brass foundry, 60 x 60.....	3,600



A PLAN FOR LOCOMOTIVE BUILDING SHOPS.

shops—that is, facility of intercourse between them and the movement of materials, will be considered together.

As most of the finished work must be taken directly from the machine shops to the erecting shops, these buildings should be adjoining each other. If traveling cranes are used in the erecting shop, its height must be equal to about two stories of an ordinary shop. With the use of elevators work can now be moved vertically as cheaply as it can be carried horizontally. Therefore the machine shops are placed alongside of the erecting shop, and if its sides are not inclosed by walls, but only by posts to carry the structure and the traveling cranes, the machine shops may be arranged on each side of the erecting shop in the form of bays in the ground floor, and of galleries above the bays, as shown in the plan. This

leading from the several shops to the turntable must be made shorter.

With this arrangement work from the smith shop would be taken direct to the machine shop next to the smith shop, and castings from the foundry would be taken to the shop adjoining it. Naturally the heavy tools to do wrought-iron work would be placed next to the smith shop and those for cast-iron work will be next to the foundry.

The arrangement of the other shops is shown clearly in the plan. They are all grouped around the center turntable, as shown, and all of them, excepting the smith shop and foundry, are connected with it. By this means work can be transported from any one shop to any other, and by a very direct route.

The office commands a view of all the shops excepting the hammer shop. This

Boiler shop, 80 x 200, two wings, 70 x 75.....	20,500
Smith shop, 75 x 175.....	13,125
Hammer shop, 70 x 175.....	12,350
Boiler house, 50 x 60.....	3,000
Dynamo house, 50 x 60.....	3,000
Wood shop, 80 x 200.....	16,000
Pattern storage, 50 x 100.....	5,000
Office, two floors, 150 x 50.....	7,500
Total.....	184,175

In addition to these, a tender shop, 80 x 200, and a paint shop, 70 x 175, are proposed. These may not be needed when works are first started. They will give an additional area of 28,250 feet, making the total of 212,425 square feet. The two shops last named are shown on the plan.

The largest irrigating dam in the Southwest has been planned by New York capitalists to cross the Rio Grande, just above El Paso. The estimated cost is \$3,500,000.

TIN PLATE.—V.

Sorting and Boxing.

Little need be said on this subject. The faults incident to the quality or the treatment of the steel from which the plates are made are readily identified in practice and can hardly be put into words. The plates—whether they have only two, or as much as four pounds of tin per box—should be free of streaks incurred in the black-plate rolling, or subsequently due to scruff in the tinning pot; there should be no bubbles, scratches or buckling, and no patches of half-coated surface. The various defective plates are sorted into their classes of "wasters," which should not under any circumstances exceed 7 per cent. of the whole. The value of ICW may be taken as 50 cents less than the value of IC per box.

The plates are boxed in elm boxes at 8 or 9 cents each with the aid of an ordinary screw clamp. Better methods will occur to all Americans. The boxes are then branded, and, for the information of those to whom the terms "Common No. 1," "Cross No. 1," "Common Doubles," "Two Cross Doubles," "Small Doubles," &c., are unfamiliar, the following list of dimensions and weights is given:

Brand mark.	Number of sheets in a box.	Sizes. Inches.	Weight. (Cs. qrs. lb.)
IC	112	20 x 28	1 0 0
IX	112	20 x 28	1 0 0
C	112	14 x 20	1 1 0
X	112	14 x 20	1 1 0
XX	112	14 x 20	1 1 21
XXX	112	14 x 20	1 1 14
XXXX	112	14 x 20	1 3 7
IC	112	14 x 20	1 0 21
2C	112	14 x 20	1 0 7
3C	112	14 x 20	1 0 7
HC	112	14 x 20	1 0 7
Hx	112	14 x 20	1 1 0
1x	112	14 x 20	1 1 21
2x	112	14 x 20	1 0 14
3x	112	14 x 20	1 0 21
1xx	112	14 x 20	1 1 14
1xxx	112	14 x 20	1 2 7
1xxxx	112	14 x 20	1 3 21
D C	100	16 x 12 1/2	1 0 7
Dx	100	16 x 12 1/2	1 1 0
Dxx	100	16 x 12 1/2	1 1 0
Dxxx	100	16 x 12 1/2	1 2 21
Dxxxx	100	16 x 12 1/2	1 2 0
S D C	200	15 x 11	1 2 21
S D x	200	15 x 11	1 2 14
S D xx	200	15 x 11	1 3 7
S D xxx	200	15 x 11	1 2 0
S D xxxx	200	15 x 11	2 1 14
Wasted or WC and X mixed	225	13 3/4 x 10	1 0 0
T T	450	13 3/4 x 10	1 0 7
X T T	450	13 3/4 x 10	1 0 14

Cost of Plant.—The cost of the plant we have been considering will be as follows:

Four tin mills and two engines, so arranged that two more mills can be coupled at a future date	\$26,928
Eight pairs cold rolls and engine	13,598
Two pickling machines, with cradles	1,228
Eight tinning sets, 28 x 20 and 20 x 14 (including royalties on patent) shafting and engines	8,500
Total	\$50,754

The total weight of material in the above, exclusive of engines and tin sets, is 353 tons 14 hundred weight. Boilers, heating furnaces, loose plant, cost of erection, buildings, &c., are not included in this estimate.

Analysis and Tests.—A streak mark in a tin plate, if cut out in strips and treated for silica will often prove whether the defect is due to the presence of sand or ganister in the tin bar maker's ingot, or

to scale or faulty rolls in the black-plate mill. Continuous mechanical tests of the annealed black plate and of the finished plate are of course of vital importance.

The quantity of tin on a tin plate may be estimated in the following way: 5 grams of tin-plate chips are weighed into an 80 c. cm. bulb flask provided with a cork, into which passes a tube and Bunsen valve, add 53 c. cm. of 5 E hydrochloric acid and dissolve. The object of dissolving out of contact with the air is to prevent precipitation of a large amount of sulphur by subsequent treatment with SH₂, if the iron were present as protochloride. Pour the solution into a 300 c. cm. beaker, dilute to 250 c. cm., add 13 c. cm. of 10 E hydrochloric acid, saturate with SH₂, allow it to stand in a warm place for half an hour, filter off the S₂ S and wash with SH₂ water. Dissolve the S₂ S off the paper with 12 c. cm. of hot 2 E N₂ S in which 0.1 gram of sulphur is previously dissolved by frequent percolation, and repeat with 12 c. cm. more. The solutions are now mixed and diluted to 100 c. cm., neutralized with 10 E HCl, and after settling the stannic sulphide is filtered off and treated to separate any arsenic that may be present; the tin is determined as oxide.

Present Condition of the Trade in Great Britain.—Surprising as it may seem, there are still a large number of manufacturers and traders in Wales who will not believe that tin plates can be and are made in the United States, and even the better informed do not grasp that the output there is already at the rate of 100,000,000 pounds per annum or 16 times the make of the first quarter of the year. On the other hand, it is not a fact that the Welsh trade is so severely hit as some of our American friends suppose. For the first nine months of the following years the quantity of tin plates exported to the United States was:

	Tons.
1890, January 1 to September 30	227,114
1891, January 1 to September 30	284,316
1892, January 1 to September 30	314,527

From January 1 to September 30, 1892, the United States, as against this, produced 10,981 tons of finished plates. The exports of this country are not, therefore, seriously suffering as yet, though threatened by the enormous increase of the trade so successfully established in the United States.

All the smaller and some important works in this country have been stopped for many months, and we believe there are at the present moment a total of 112 mills idle, while many others are working in only a desultory fashion. This great depression must be attributed chiefly to over production, the many mills that were run up during the year preceding July, 1891, having been the climax of a power of production that was already excessive. And we now recognize that the manufacture, at least of commons and ternes, for export to the United States has passed from this country forever, or is about to do so, tariff or no tariff. It is not generally expected that any large change in this tariff will be made in the face of a powerful established trade, or that the big steel makers, having found a new outlet for their produce, will let it slip from their hands.

At least three English syndicates who have been awaiting the result of the election for some months have now definitely abandoned any idea of erecting plants in the States. A manufacturer who visited several sites, in preparation of a scheme by which he proposed to export and coat his own black plate in that country, makes the following interesting but rather exaggerated estimate of the cost of doing so—in-teresting, because the cost of imported as

compared with home-manufactured black plate will be apparent to the reader.

Cost of Coating Imported Black Plate, Ternes Reduced to 14 x 20.

	Per ton.	Per box.
Black plate, 1 ton, f.o.b.	\$40.34	
Duty, 2,240 pounds at 1 65/100 cents.	36.96	
Freight.	1.82	
Delivery charges to works.	2.10	
	\$81.32 = \$3.87	
	Per box.	
Lead, 2 1/4 pounds; tin, 1 pound; 3 1/2 pounds at 12 cents.	\$0.420	
Coal (at \$2.88). . . . .	.032	
Vitriol, 2 1/4 pounds at 1 1/2 cents. . . . .	.037	
Palm oil, 1 pound at 6 cents. . . . .	.060	
Flux, 2 pounds at 2 cents. . . . .	.040	
Box . . . . .	.000	
Stores. . . . .	.075	
	\$0.754	
Credit: Dross, metal and copperas. . . . .	.011 =	.74
Labor (American Association):		
Pickling.	\$0.05	
Tinman. . . . .	.12	
Boy. . . . .	.04	
Cleaning and dusting. . . . .	.02	
Assorting. . . . .	.06	
Carrying, extra labor, &c. . . . .	.05	
Boxing. . . . .	.02	
Day wages.—Foreman. \$5.00		
Smith and striker.	3.75	
Mechanic.	2.25	
Engineers and firemen.	8.50 =	.15 .51
Commission to agent, 1 1/4 per cent. on \$5.40 . . . . .		.08
Rent, rates and taxes . . . . .		.03
Interest on outlay . . . . .		.04
General charges and management expenses. . . . .		.07
Total.		\$5.34

It is well known that labor is one of the most difficult questions in the South Wales trade. The following resolutions were passed by the Tin Platers' Executive on November 26 last, and may be taken as illustrative of the policy the workmen pursue and of their general ignorance of affairs in America and elsewhere:

1. This executive, viewing the unpatriotic conduct of Messrs. Morewood & Co. in assisting Americans to deprive Wales of its staple trade, and observing that black plates are exported to be coated in America with a view of misleading the American public that they are producers of tin plate, and that in this way South Wales works and Cwmbrwla millmen are used as instruments to the injury of their own tinhousemen, calls upon the Cwmbrwla and South Wales millmen to protest against being made instruments for such purpose, and are prepared to approve of their action if they present their employers with a general notice.
2. That the executive ask the branches to prepare themselves with a view of taking action to prevent the exportation of black plate.

In conclusion, whatever other difficulties may occur in the progress of the industry in the United States it is to be hoped that the Workman's Association will not hamper and limit the productive power of first rate mills of efficient and costly tinning machines, or of any of the numerous inventions by which the employer effects economies and extends his operations. In Wales, however much the employer may be pressed by his shippers, however desirous of floating his standing charges in a larger output, however low his profit or heavy his loss, the Union permits only 36 boxes. The most rapid and efficient tinning pot is on the same footing as the oldest—36 boxes. As much as anything else, it is this difficulty that has induced certain Welsh manufacturers to take advantage of the provisions of the McKinley act, and to leave the staple industry of Wales babbling astonishment at the want of patriotism and long suffering displayed. But whatever number of manufacturers transfer their capital, it matters little. The day was bound to come when America could manufacture its own iron, or rails,

or tin plates. That day has most certainly come, and again it matters little whether the tin plates are manufactured by an American or by a Welshman provided they be made in Ohio or Pennsylvania. There will still be room for gallant little Wales elsewhere.

The Warner Mortar Mixing Process.

The latest utilization of machinery on a large scale in connection with building trades is in the manufacture of mortar. For a long time mortar mills have been used in connection with building, but their employment has been largely confined to the utilization of some waste product to take the place of sand. The departure from old methods practically creates a new industry in which all grades of mortar are prepared and delivered to the building in course of construction by means of shute wagons in any quantity required.

The Warner Process.

Since April, 1891, a process known as the Warner process of making machine-mixed mortar has been in successful operation at Wilmington, Del., and this has led to a new company being formed at Philadelphia, known as the Quaker City Mortar Company. The capacity of these works when completed is given in the official announcement of the company as 2,000,000 pounds of mortar daily, while it is stated that 7,500,000 pounds of lime paste are held constantly in stock. It should here be stated that there is nothing in connection with the process such as machinery, &c., that is patented, although a patent is held on the process itself.

While the exact operations as carried on at the factory of this company might be considerably modified in other factories as necessitated by the size and shape of the buildings and other conditions, a detailed description of them will probably prove interesting and will indicate the principles upon which the different mortars are prepared. To fully comprehend the process it will be convenient to trace each of the materials through its course and we will commence with the lime.

Process of Mixing.

Cars containing the lime are brought on a siding directly adjacent to the slacking room and the lime shoveled through openings leading to bins in the slacking room. Inside this room are four of these bins immediately above the same number of slacking pans or mills in which the lime is slacked. This room measures 50 x 60 feet. A slacking machine consists of an iron pan, some 6 feet in diameter, that revolves about four times in a minute. Descending vertically into it are three iron arms or paddles that revolve in the same direction, but much more rapidly, making about 30 revolutions in a minute. Close to these arms is a curved iron plate that may be raised or lowered vertically, the object of which is to prevent the lime from being carried around with the pan and to hold it in a mass for the revolving arms to break it up. In the middle of the pan is a larger plug which may be raised when desired by means of a link chain passing over a toothed wheel operated by a lever. A 3-inch water pipe discharges into the pan. At the back of the machine is the lime bin, which is made with a sloping bottom, and a vertically sliding door is provided, with a long handle, so that when the door is raised the lime descends by virtue of its own weight into the pan.

Two men operate the four machines. One of them raises the door in the bin and the lime falls through quickly until 10 bushels are in the pan. He then closes the door, pours on water and starts the machine. The pan revolves and the arms go rapidly around churning the lime up fine and mixing it thoroughly with the water. In exactly ten minutes the 10

bushels of lime are all slacked and are converted into what may appropriately be termed "lime-milk," that is, fine portions of lime held in suspension by the water.

The operator now pulls the lever which raises the plug in the bottom of the pan, and the hot, steaming lime milk runs out and discharges into a channel or gutter that slopes down toward the central pit or well. This channel is provided with two iron screens or gratings, varying in width, and the lime passing through them leaves behind it all the larger impurities or core. The gutter discharges into a pit which is covered with a No. 12 wire screen, and the lime milk pouring through this is strained from all the finer core which may have passed through the channel gratings, so that the pit is filled with pure lime milk. When plasterers' white coat paste is being prepared finer screens than No. 12 are used, so as to insure absolute freedom from impurities. The four slacking pans may be run at the same time by two men, and together are capable of slacking 2000 bushels of lime in one day.

Connected with the pit is a large force pump which empties it as fast as the lime milk is poured in. The pump is connected with a number of 6-inch iron pipes, discharging into various vats located in the upper part of the building. There are no less than 42 vats in all, holding 600 bushels each, or sufficient to retain 25,000 bushels of quicklime or 7,500,000 pounds of seasoned paste. The capacity of the vats in the aggregate is about 100,000 cubic feet.

Time Required for Slacking.

The lime milk which is pumped into these vats remains at least 21 days or even longer and during that time every particle of the lime becomes thoroughly slacked, the heat which is retained aiding in producing this result. Thus a very important difference exists between the lime prepared by this process and that ordinarily used in building. In the latter case the object is to get rid of the heat and water as quickly as possible, while in this process the heat and water are retained, both aiding in producing a thorough slacking. At the expiration of three weeks the lime becomes a somewhat thick homogeneous paste of a putty-like consistency, every particle of which is slacked and which by that time is entirely free from heat.

In the large vat rooms on the lower floor each vat is provided with a 3½-inch syphon, which, when standing upright, reaches above the top of the vats. This is protected on the top with a wire cover to prevent large foreign material that might have found its way in from passing through it and it is hinged at the bottom so that it may be lowered to any depth required to draw off water when necessary. After the lime milk has been standing a day or two the lime becomes settled, leaving the water on top, which effectually prevents the lime from hardening. When it is desired to draw off the water the syphon is lowered and the water runs through it to a central pump, by which it is forced to a settling room heated by exhaust steam. From this settling tank the water is used a second time, for it is obvious that water impregnated with lime is much better than fresh water for slacking purposes.

The 42 vats above mentioned are on the second, third, fourth and fifth floor of the factory. Under ordinary circumstances the lime milk is pumped to the upper vats directly over the mixing room, presently to be described, but when the lime is slacked faster than it is used the lower vats are employed for storage purposes.

The large vat room on the lower floor is used for storage, and is supplied with a system of gate valves by which the lime milk may be discharged into any vat desired. When the paste is kept more than 21 days a little more of the lime milk is pumped on it to keep it in a plastic condition. We have now seen the lime slacked and pumped into the vat room. As all of the lime must obviously be taken

to the upper portion of the building so as to descend with the sand into the mixing machine, we inquire the means provided to raise it from these lower vats. We find that all the vats on the lower floor are provided with iron gates. On these gates being raised the paste runs slowly out—slowly because it is somewhat thick—on to a rubber belt conveyor, which takes it as fast as it is required for use in the factory down to the central pumps. There the conveyor passes close to a rubber scraper, which scrapes off the paste, and it is then pumped to the room immediately over the mixers, where it is ready to descend by gravity. The pumps are similar in construction to those used in the more improved paper mills for pumping paper pulp.

The Sand.

Having traced the lime throughout its course and seen the machinery used to convey it, we will now turn to the sand. Between the river and the factory are railroad tracks and it is necessary to provide means for conveying the sand across them. This is done by means of a rubber belt conveyor which is carried underneath the railroad at a slight inclination. The sand is shoveled on to the belt and is discharged into a receptacle inside the works itself. Here it is carried up to the top of the building by means of a large bucket conveyor, where it is screened and a portion of it carried to the mixers, while some of it is discharged into the conveyor room ready for those who desire to purchase the sand. The bucket conveyor will take up 1000 tons of sand a day.

Coming to the top of the building we find the bucket conveyor discharging into a hopper, which in turn discharges into a large wire screening machine. This machine is made in the form of an octagonal prism, 11 feet long and 5 feet in diameter. Each long side is covered with No. 5 wire screen and the machine is set at an angle of about 20° and revolves rapidly, throwing the sand from side to side and freeing it from all large stones, &c. The screened sand passes through the wire on to a 20-inch rubber belt conveyor, while the stones, &c., are discharged from the inside into a box provided for the purpose.

The belt sand conveyor is nearly 200 feet long and it carries the sand to a similar belt running at right angles, where it is carried directly to the hoppers over the mixing room. The total distance traveled by the sand is nearly 1000 feet. At the sides of the belt connected with the screening machine are wooden shutes, and when it is desired to discharge the sand to the sand room, triangular iron scrapers are let down close to the belt, which scrape off the sand and cause it to pass down these shutes.

The Mixing Process.

Having now seen both sand and lime dealt with, we will proceed to the mixing room and watch the interesting process of actually making the mortar. Coming to this room, we find four large mixing mills not unlike the slacking machines in general appearance. A large iron pan revolves five times a minute. In it are two iron mixers or paddles, each having three arms that revolve 45 times a minute. In the center of the pan is a large plug operated by an endless chain, and when this is raised a hole is exposed through which the mortar descends directly into the wagons below. Discharging into the pan are four 9-inch iron pipes that convey the lime paste from the different vats on the upper floor. A 2-inch water pipe is provided, and at the back of the pan is the wooden shute leading from the sand hopper.

The paste and sand having been put in the mixer, it is started, only a little water being added at first to prevent splashing. By the two revolving mixers and the revolution of the pan itself the materials are thoroughly mixed in a very short time. Then the plug is raised, and the mortar passes out of the hole into the wagons beneath. The machine is not

stopped, but as the three armed mixers pass in their revolutions over the whole space of the bottom of the pan exactly to the edge of the circular hole all the mortar is carried out.

Colored Mortar.

When colored mortar is required the color is added to the mixture from pails. Some red mortar, mixed by hand in the ordinary way and placed in the mixer,

when using machine-mixed mortar than he can when using that mixed by hand.

When machine-mixed mortar is used plastering may readily be executed in the coldest weather. The mortar being mixed entirely under cover, can be conveyed in the closed wagons and shot directly into the cellar of the building to be plastered, which can be artificially heated for the purpose. It may be added that a number of prominent builders and plasterers form

The Hawley Down-Draft Furnace.

The Hawley furnace has now been in use for several years and has given excellent results with stationary boilers, both in economy and as a smoke preventer. The construction of this furnace as applied both to ordinary cylindrical tubular boilers and to stationary boilers of the locomotive type is clearly shown by our illustrations.

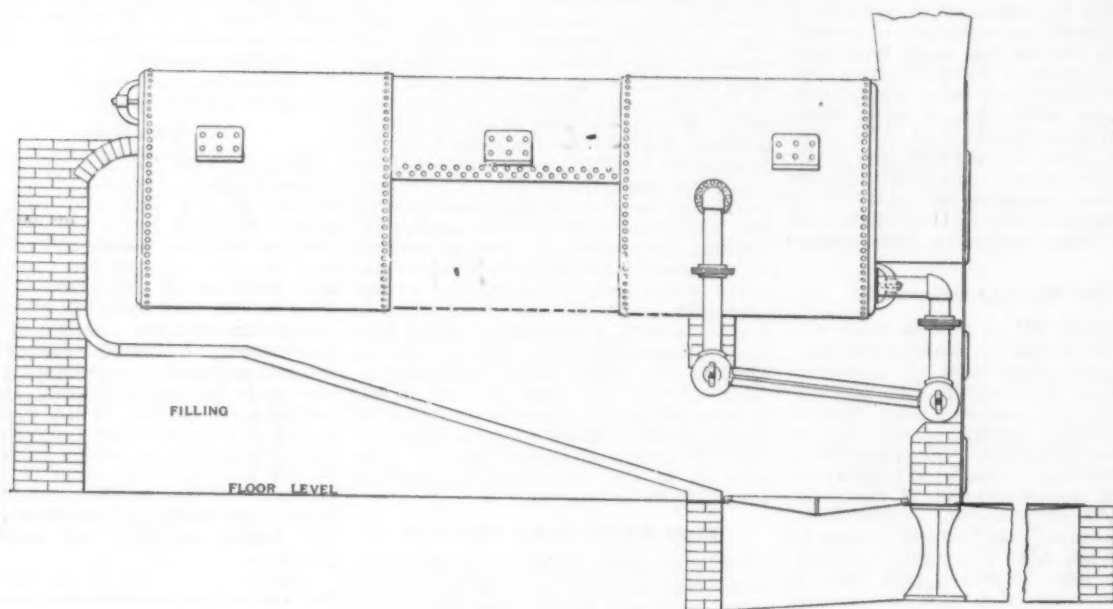


Fig. 1.—Side Elevation.

shows a very decided red color, but after it has been mixed by the machine a great deal of the color disappears and the mortar becomes almost white. This result is explained as follows: In hand-mixed mortar there is a large portion of the bulk that is made up of comparatively large lumps. When the mortar is colored these lumps become colored on the outside only, giving the color to the whole mass. Now, when the same mortar is mixed in the machine these lumps are reduced to much finer particles, thus exposing the uncolored portions of the interior, and requiring much more mortar color to tint the mass. Nearly three times as much color is usually required.

The Wagons Employed.

Going to the ground again, we find the wagons loading up from a chute descending from the mixing room. These wagons are specially made for the purpose somewhat on the same principle as ordinary chute carts used for coal. The wagons hold 5500 pounds each, and from them the mortar may be readily shot down either inside or outside a building, as may be required. The mortar is also delivered in boxes suspended from specially made vehicles by chains. These boxes hold 5000 pounds of mortar, and may be carried inside a building, being, therefore, most used for conveying plasterers' mortar. The mortar is also delivered by rail in car-load lots.

The company make eight different kinds of mortar, and they also mix by their machinery any proportion of materials desired.

Advantages of Machine-Mixed Mortars.

The advantages claimed for machine-mixed mortar are many. From a constructional point of view there is an advantage in using machine-mixed mortar, and that is the perfection of the mortar joint. The perfect screening by machinery of the lime removes all sticks and stones and produces a mortar that consists only of small particles. For this reason it is estimated that a bricklayer can lay from 300 to 500 more bricks in a day

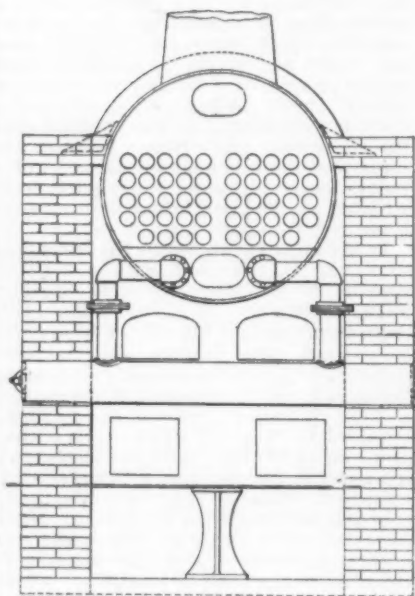


Fig. 2.—Front Elevation.

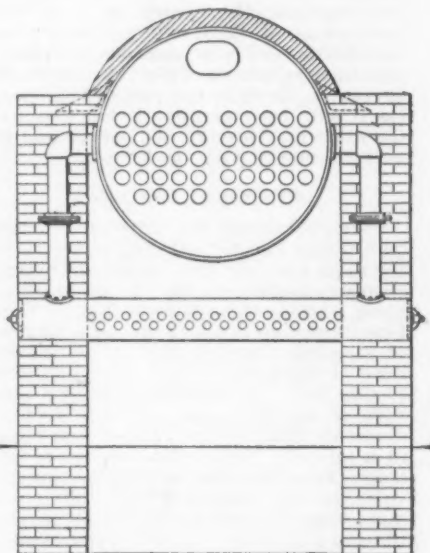


Fig. 3.—Sectional Elevation at Back of Grate.

THE HAWLEY DOWN-DRAFT FURNACE.

part of the Quaker City Company, including Wm. H. Albertson, who is the president of the company and vice-president of the Philadelphia Master Builders' Exchange; Edward Tatnall Warner, the inventor of the process, who is vice-president, and Ralph Peverly secretary.

The Chillan and English companies running up the coast from Valparaiso to Panama have notified shippers that after February 1 no goods to or from New York will be granted through bills of lading by way of the Pacific Mail line.

Referring to Figs. 1, 2 and 3, it will be seen that the furnace consists of two grates, of which the upper one is a water grate from which connections to the boiler are made by two drums and suitable connecting pipes. The details of this construction have been varied to some extent in applying it to different boilers, and to stationary boilers of other types, water legs having been used in some cases instead of the pipe connections.

* Reprinted, by permission, from the Railroad Gazette of January 6, 1893.

The construction of the furnace as applied to a locomotive boiler for stationary use is shown in the remaining illustrations, Figs. 4 to 6. In this case the tubes of the water grate are secured in the back sheet of the fire box at one end, and into a drum

10 inches in diameter and extending across grate in this form of boiler is clearly shown in the illustration.

In using this furnace the fresh coal is charged on the upper grate and is partly consumed there, the remainder dropping through to the lower grate where the combustion is completed. The main supply of

complete, and that a large amount of coal can be burned under the boiler as compared with other smoke-preventing furnaces. This possible rapidity of combustion is an important feature which we believe has not been satisfactorily accomplished in any other form of smoke preventing furnace. It is of particular importance from the fact that for commercial reasons it is desirable through the Central States, where cheap bituminous coal is used, that a high rate of combustion should be maintained. In other words, commercial

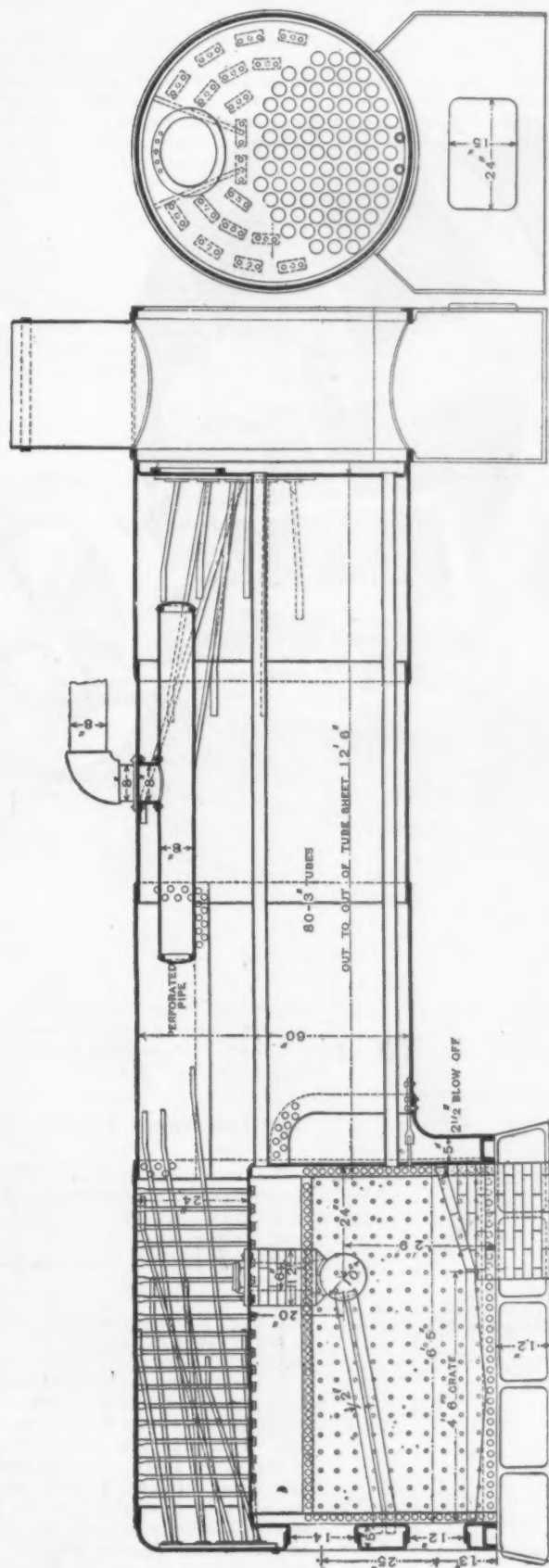


Fig. 4.—Economy Internally-Fired Boiler, with Hawley Down-Draft Furnace.

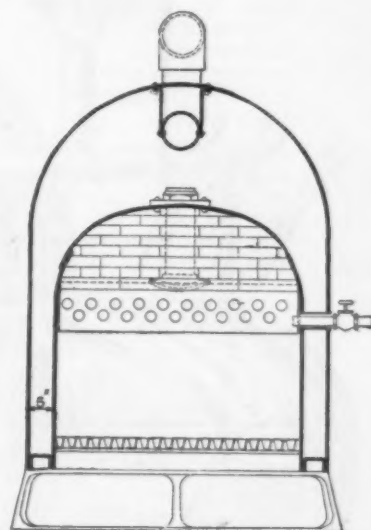


Fig. 5.—Cross Section.

economy in steam production demands that a large amount of coal should be burned per square foot of grate surface, and that the boilers should be forced to some extent. A rate of combustion as high as 45 pounds of coal to square foot of grate has been obtained with the Hawley furnace, and a rate exceeding 30 is by no means uncommon. In considering this, however, it must be remembered that the grate surface of the single grate of the Hawley furnace, as

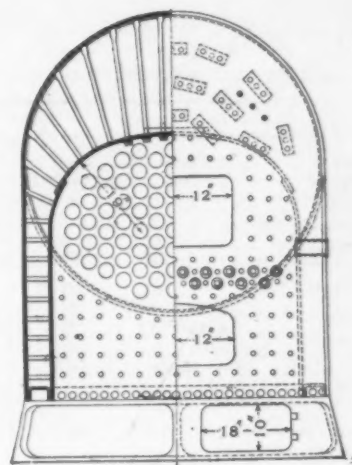


Fig. 6.—Sectional Front Elevation.

the fire box at the other end. This drum is connected with the main part of the boiler by a 6-inch vertical pipe which passes through the crown sheet, and which is surrounded by a bridge wall constructed between the crown sheet and the drum. The arrangement of the lower

air for combustion enters through the furnace door above the upper grate and therefore passes down through the fire on this grate and then over that on the lower grate to the chimney. Some air is supplied below the lower grate. The practical result of this is that the combustion is very

usually constructed, is somewhat less than that of the ordinary plain grate.

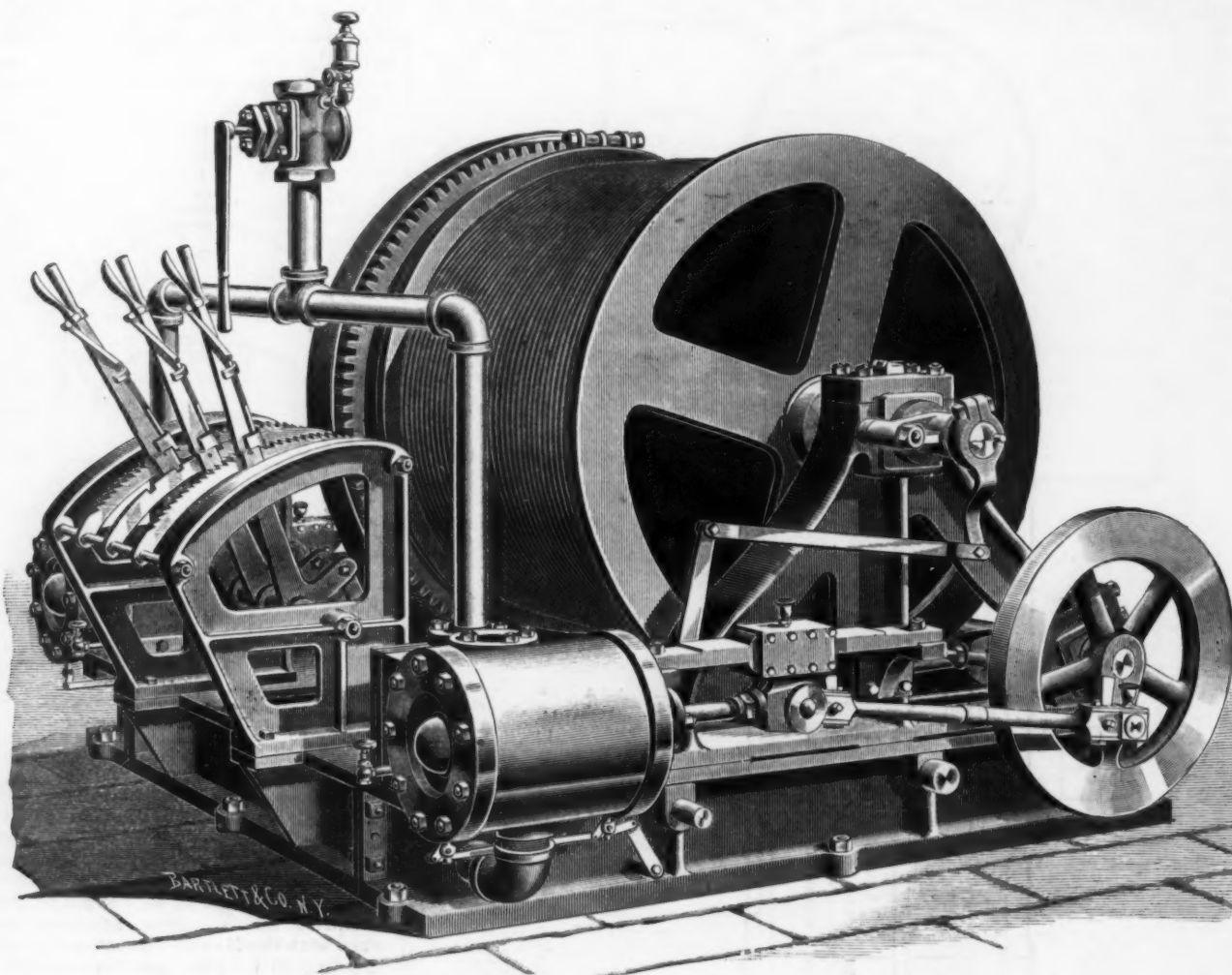
Many of the best results of this furnace have been obtained in tests made by well-known engineers, who had no interest in the furnace whatever, and the rate of combustion secured has in many cases been quite surprising to the engineer making the test. We add a table showing tests

made at the power station of the Chicago Edison Company on Heine boilers with the Hawley furnace and with the Jarvis furnace by R. W. Francis, chief engineer of the Chicago Edison Company.

We are informed by J. R. Groves, superintendent rolling stock of the St. Louis

water grates taken out on account of the scale which had accumulated. The other two boilers have been in service five years and have had the flues renewed on account of scale, and the water grate has been removed in one of them. In the other no repairs whatever have been made to grates.

So much for the Hawley furnace as it has been tried in practice by disinterested engineers. On the other side we have the following from an interested promoter of the furnace. He says that it is proposed to make certain tests, in which the fuel used is to be slack coal and water, in the



THE LIDGERWOOD SINGLE-DRUM HOISTING ENGINE.

& San Francisco Railroad, that three locomotive boilers fitted with the Hawley furnace are in use at the Springfield shops of

Mr. Groves says they use nothing but slack coal, and find that they get about as good results as with good lump coal. The boil-

proportion of 6 pounds of slack to 1 pound of water. "Every pound of water thus consumed produces as much steam as a pound of fuel does."

Tests of Heine Boilers at the Chicago Edison Plant.

Date.....	Sept. 14	Sept. 15	Sept. 16	Sept. 17	Sept. 7	Sept. 21
Kind of furnace...	Hawley	Hawley	Hawley	Hawley	Jarvis	Jarvis
Duration of test, hours.....	6	6	6	4	6	5
Grate surface, sq. feet.....	49.5	49.5	49.5	49.5	54	54
Rated horse-power	329	329	329	329	329	329
Horse-power developed.....	576	523.5	436.2	354	497.2	485.5
Kind coal used	New Kentucky	New Kentucky	Mt. Olive	Hazel screenings	0.75 New Kentucky 0.25 Anthracite pea	Youghiogheny
Coal burned per hour, total pounds.....	13,200	10,800	10,550	6,500	12,000	7,500
Coal burned per hour per square foot grate.....	44	36.3	35	32	37	27.8
Steam pressure.....	113.5	114.3	115.2	114.5	114.1	112.9
Temperature feed water.....	66	66.5	65	66.2	72.3	68
Evaporation per pound coal, actual.....	7.55	8.21	7.16	6.29	7.22	9.36
Evaporation per pound coal from and at 212°.....	9.03	9.81	8.54	7.51	8.58	11.17
Relative horse-power developed	1.63	1.48	1.23	1.00	1.40	1.37
Relative cost of coal per ton.....	2.50	2.50	1.73	1.00	2.50	2.96
Relative cost of coal per horse-power hour.....	2.08	1.87	1.52	1.00	2.20	2.00

this company. One of these boilers has been in use for about nine years, and has been repaired by having the flues and

ers are very satisfactory, as they generate steam quickly and freely with a poor quality of coal.

The Lidgerwood Hoisting Engines.

The latest improvements made by the Lidgerwood Mfg. Company of 96 Liberty street, New York, are embodied in their new mining engines. The engravings represent a double and a single drum mining engine—the well-known form of friction drum engine of the Lidgerwood type—having two separate engines connected to one crank shaft, with cranks set at an angle of 90 degrees. On this crank shaft is a small pinion which meshes with a large gear wheel, the proportions of one to the other being from five to one to six to one. This large gear wheel is keyed fast to the drum shaft. On the side of this gear wheel is bolted wooden segments in the form of a double V. The drum is arranged to be loose upon the shaft or to be thrown into friction when it is to take the motion of the gear. We will not describe the method of throwing in this friction because it is a well-known type which has been used for many years, the only improvement being one of proportion. This drum has a differential brake lined with blocks of wood fastened to the band by means of lag screws.

The engine has reversible motion and the lever for operating the links as well

as the lever for operating the brake and the friction are all brought together in a central position, as shown in the illustration. This arrangement of levers is considered a very great improvement and has been adopted on all of the Lidgerwood Company's mining engines.

This engine, it is claimed, unites all the good qualities of the reversible engine as well as the friction drum engine, and therefore may be used for all work requiring either of these engines.

In a single shaft all the hoisting of ore may be done by the engine in the usual way, and the empty car or bucket lowered by means of the brake; while for hoisting and lowering the men the drum may be thrown into gear and the engine used as a reversible engine, handling the load entirely by steam. It being a reversible engine, the links may be hooked up after the load is started, cutting off steam at any point of the stroke desired, thus doing most of the work by its expansion in the cylinders, while by lowering by means of the friction drum and brake the engine does not run and therefore uses no steam.

The description of the double drum engine is just the same as that of the single-drum, the point of difference being that two drums are used instead of one, both absolutely independent of one another; hence, in operation, the same work can be done as though two of the single drum engines were used. These drums may be thrown into and out of gear while the drums are in motion, either separately or together, or one may be lowering while the other is hoisting, or both drums may be thrown into gear and the engine used as a regular reversible engine.

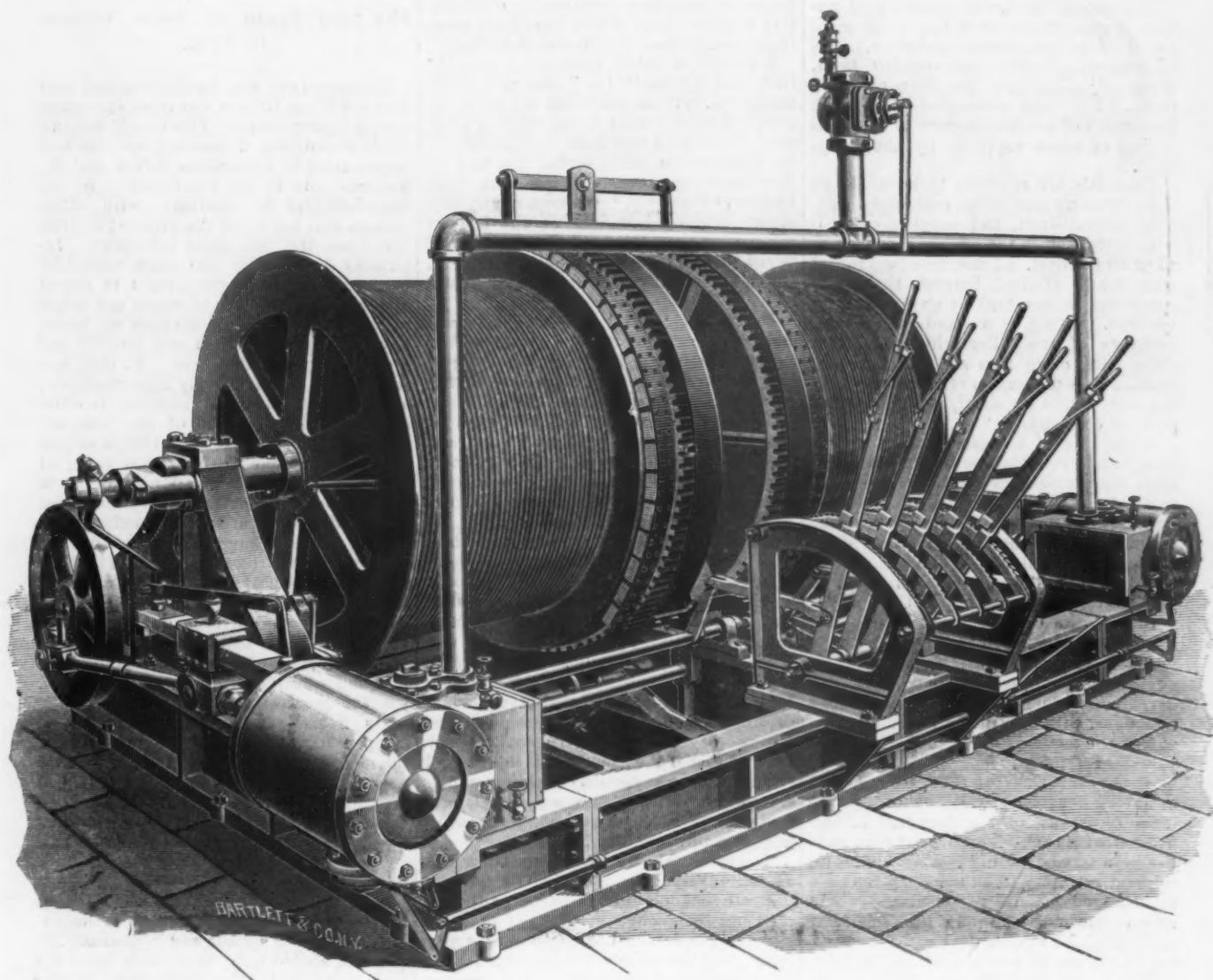
The Lehigh Zinc & Iron Company have been using an engine similar to the double drum engine shown, near Franklin Furnace, in the celebrated Franklin Furnace zinc mines. The size of the cylinder is 14 x 18, the drums are 66 inches diameter and 66 inches face, the whole engine weighing about 50,000 pounds.

At Pittsburgh recently, Antonio Rienzo entered suit against the Carnegie Steel Company, Limited, for \$5,000 damages

six others unloading iron beams from cars. The men, it is charged, were all unskilled and under an unskilled foreman and the number was inadequate to the work. At the same time skilled workmen were at the gates of the works asking employment. Yet the company knowing this permitted the unskilled men to proceed. In consequence an accident happened when unloading a beam from a car and Rienzo had one foot crushed and lost several toes.

The three superb "Empress" steamships put on the route between British Columbia and Japan are probably an example of "vaulting ambition," too fine to be profitable. It is rumored from Quebec that they will be transferred to the Atlantic side of the continent.

We are advised that Messrs. Pilling & Crane of Philadelphia have been appointed general managing agents for the Caledonia Mining & Mfg. Company, a large corporation owning 18,000 acres of mineral and timber lands in Adams and Franklin



THE LIDGERWOOD DOUBLE-DRUM HOISTING ENGINE.

A special feature of this engine is that, while it was designed mainly for single shaft work, it can also be used on a double shaft by simply throwing the friction into gear permanently and using it as a reversible link motion engine, hoisting the cage and load in one shaft and at the same time lowering the empty cage in the other shaft.

for injuries received in the Homestead Steel Works. The plaintiff, in the statement of his case, recites that on July 6, 1892, the company had a disagreement with its men in the Homestead works and refused to give work to any of its former employees. On August 12, 1892, Rienzo, the plaintiff, was engaged to work in the mill. He was put to work in a gang with

counties, Pennsylvania, and operating 15 miles of railroad. Several mines are already opened and equipped with a capacity of 200 tons of brown hematite ore per day. In addition to timber interests, this property embraces valuable flint and gneiss rock quarries, large quantities of which materials are now reaching the markets.

Liquid Fuel Trials in France.

A recent issue of *La Marine Française* gives a brief account of a series of experimental trials which have been made in France in order to determine the feasibility of using petroleum as an auxiliary fuel for steamers, and particularly for torpedo boats and other naval vessels.

While the disadvantages connected with the use of liquid fuel by itself have prevented its general adoption for marine purposes, still in some respects its superiority over coal has been fully demonstrated. It was therefore to be expected that attempts would be made to secure the benefit of the best features of both kinds of fuel by using them together.

The experiments referred to as having been made in France were conducted at Cherbourg and at Toulon, extending over a period of several months. One of the chief objects in view was to ascertain whether petroleum used in connection with coal could be substituted for forced draft. Preliminary trials were necessary to determine the relative proportion in which the two kinds of fuel should be used to give the best results.

In pursuing the investigations, coal was used to generate steam in the usual manner, the fires being urged constantly. The oil was supplied in finely divided form, being injected into the furnaces in a spray. This was accomplished through the agency of a special apparatus by means of jets of steam supplied by the boiler itself.

The trials are reported to have shown that, by using coal in the customary way, with natural draft, and supplementing it with petroleum in the proportion of about 15 or 20 per cent. of the total weight of both kinds of fuel burned, the boiler power can be increased by about 20 to 22 per cent., taking as a standard the performance of the boiler when using coal alone with clean fires and with natural draft. This proportion of petroleum gave the best results obtained, from the standpoint of economy.

In the case of a vessel having only a moderate forced draft power, it was found that, increasing considerably the proportion of petroleum burned, the highest power obtainable was practically the same as could be developed with forced draft when using coal alone. While using petroleum no special means were employed to give a stronger current of air than usual.

But as the definite result of the tests made, the conclusion was reached that vessels having closed fire rooms and thoroughly efficient forced-draft appliances can develop a much higher power by burning coal alone, with forced draft, than by using any of the methods which formed the subject of experiment.

At the same time the trials are regarded as having demonstrated the value of petroleum for use as an auxiliary fuel in connection with coal. This mixed fuel, as it has been termed, would enable boilers to respond promptly to sudden demands for an increased amount of steam and would afford a means of keeping up a relatively high speed for several days without resorting to the use of forced draft and without subjecting the fire-room force to any undue strain. The weight attached to these considerations is evident from the fact that orders were given to fit several vessels with the special appliances necessary to enable them to use mixed fuel, which will thus be tried under ordinary service conditions.

Possibly, however, these orders may be modified in view of the result of later experiments at Toulon, designed to test the degree of danger involved in the storage of petroleum in tanks liable to be struck by projectiles. According to accounts published in late foreign newspapers, ten cases filled with petroleum, protected by

metal plates similar to the sides of a torpedo boat, were placed on a raft and 12 shots were fired at them from a rapid fire gun, the result being the ignition of the contents of eight of the cases. This would seem to be conclusive as against the use of petroleum as fuel on board torpedo boats.

Turning now from these experiments mention may be made of a trial of a less elaborate nature which took place recently in France and the details of which have been reported with a considerable degree of fullness in *Le Yacht*. This trial consisted simply in the successful use of liquid fuel on board the steam yacht "Iris" during a run of several hours from one port to another, with a distinguished party of guests on board, including a committee representing the important "Union des Yachts Français."

The "Iris," a small vessel, is fitted with appliances permitting the use of either coal or liquid fuel separately, at will, or if desired both can be used together. It is claimed that any steamer, large or small, can be so fitted. On the occasion referred to, liquid fuel only was used. The very satisfactory results obtained demonstrated the excellence and simplicity of the special plant installed on board the "Iris," but apart from this were simply confirmatory of other trials which have been made from time to time in different countries.

It should be noted particularly that the fuel used by the "Iris" was not crude petroleum, but the residuum left after the crude oil is subjected to the refining process. The liquid fuel used so successfully by steamers on the Caspian Sea and by Russian locomotives is this residuum, there known as "astacki," a brown sirupy substance composed mainly of the heavier petroleum oils. It is not inflammable until raised to a temperature of about 350° F., and is practically free from disagreeable odor.

During the "Iris" trial one man was able with ease to run the engine and to care for the fires. The fuel was injected into the furnace in the form of spray, this being accomplished by the aid of steam, the process being under perfect control by means of valves regulating the supply, and the fires being managed readily. There was not the slightest trace of smoke, neither was there any kerosene odor. There was, of course, entire freedom from the annoyance caused by cinders, and there were no ashes to be thrown overboard. Changes in speed could be made quickly, and high speeds could be maintained without difficulty. The fire room was comfortably cool.

The report of the weight of fuel burned, a little more than one-half what would have been necessary had coal been used, is substantially in accord with the published results of earlier experiments, which showed that if the weight of liquid fuel required to do a certain work be represented by 4, then the weight of coal necessary to do the same amount of work may be represented by 7.

The results shown by the trials of which an account has been given would seem to indicate that for special purposes the use of liquid fuel, whether by itself or as an auxiliary, is destined to become more general. But the difficulties connected with the questions of distribution and storage, cost and danger of explosion will probably continue to operate for a long time against its widespread adoption for employment in marine boilers.

The latest article of manufacture from the metal aluminum is the shell boat which is building in Philadelphia for the Cornell College crew of Ithaca, N. Y. Nearly all the college shells are now made of paper, and many of them are manufactured by E. Waters & Sons, Troy, N. Y. George A. Waters of the firm

was asked his opinion in regard to the aluminum boat. He said: "We have no fear of the aluminum shells ever proving a rival to paper, and we do not anticipate the Cornell's new shell will be a success. An aluminum shell was constructed last year for a Newark man, and was found so heavy that it could not be rowed. The only advantage claimed for aluminum is its lightness, and yet, as stated by the manufacturer, a square foot of aluminum of sufficient thickness for a shell weighs 7 ounces, while a square foot of paper weighs only 5 ounces. To make the hull of aluminum the material must be warped to the required form, as is the case with wood. On the other hand, paper is molded to form, and, therefore, the hull possesses a strength of its own, regardless of the interior bracing, which neither wood nor aluminum can have. In an aluminum shell the bracing necessary to give the required stiffness would be so much heavier than the bracing in a paper shell that even if the hull weighed absolutely nothing the complete boat would be heavier than the paper boat. We have made many experiments with aluminum, but have had no success with it."

The Iron Trade of Great Britain in 1892.

The year 1892 was, for the iron and steel trades of Great Britain, one of an extremely unsatisfactory nature. This continued and rarely fluctuating depression was due to a large extent to extraneous forces and influences. It is not the inability of the manufacturers to compete with other nations that has made the greatest impression upon the two great industries. Internally the country has been visited by one or two of the largest strikes in recent history. The question of wages and hours of labor, as well as the division of labor, have unfortunately been very forcibly and disastrously combated over. To this, and to tariffs of an excessively high character, as well as to financial troubles in other countries, the condition of the iron and steel trades during the year 1892 is almost wholly attributable. There has been, of course, a universal depression prevalent in these trades, but extraordinary obstacles have undoubtedly arisen to handicap the British manufacturer. It is not usually without some extreme provocation that the British manufacturer closes his works and retires from the strife. Yet this has been no uncommon occurrence during the past 12 months. All through the year labor disturbances have been ceaseless in the ship-building industry, in mining, in iron works, but the greatest and most far reaching in its effects—results to which there is no compensating side—has been the strike of the miners in Durham, a strike which involved the cessation from work of 80,000 men for a period of 12 weeks. With the stoppage of that part of an industry which annually provides nearly 30,000,000 tons of coal and the basis of the production of coke, which is transported to many iron-producing districts for the manufacture of iron, it is impossible but that a serious and permanent impression should have been made upon the iron, steel and other industries of the country. The engineering strike on the Tyne and Wear through which 20,000 men were deprived of work, and the same action on the part of the West Cumberland miners, are other extensive influences which have contributed to greatly restrict the iron and steel industries. It is unnecessary to enter into any details as regards the collapse of the Argentine Government; nor to the financial weakness of other South American States, together with Italy, Spain and other countries. The restrictive duties levied also by foreign nations, including the United States,

Spain, Portugal, Russia, &c., are also well known in their effects.

So far as production is concerned we have only the figures for the first half of the year to go upon, but we may supplement these by figures which will at least disclose the general results of the year's working. The following table shows the output from the furnaces for the first two halves of 1891 and 1892:

District.	1892.	1891.	Increase or Decrease in 1892.
	Tons.	Tons.	Tons.
Cleveland	600,819	1,320,083	-719,244
Scotland	466,000	392,600	+73,400
Cumberland	222,747	342,051	-119,304
Lancashire	236,505	344,281	-107,776
South Wales	332,087	358,007	-25,920
Lincolnshire	109,847	121,910	-12,063
Northamptonshire	88,098	97,824	-9,726
Notts and Leicester-shire	138,548	139,329	-781
North Staffordshire	137,424	117,996	+19,428
South Staffordshire and Worcestershire	98,573	114,030	-15,456
South and West Yorkshire	170,135	173,378	-2,243
Shropshire	124,789	124,291	+498
North Wales	25,335	24,634	+701
Other districts	22,312	26,977	-4,665
Totals	17,499	16,077	+1,422
Totals	2,790,918	3,712,387	Net decrease 921,469.

To obtain the total quantity of deliveries there must be added in the production the decrease in stocks, which, comparing the two half years as given above, amounted to 595,122 tons, but when contrasted with the stocks at the end of 1891 the decrease stood at 591,827 tons. Thus the total deliveries for the six months ending June 30, 1892, amounted to 3,383,745 tons, compared with 3,884,463 tons June 30, 1891, while the home consumption amounted to 3,050,354 tons, against 3,532,554 tons in the first half of 1891. The principal district of diminution has, of course, been Cleveland, and for the first six months the outputs were as under:

	1892	Tons.
January	217,381	
February	198,924	
March	163,788	
April	11,879	
May	6,124	
June	37,765	

In consequence of this condition of things, stocks were largely drawn upon, and the stores for the six months presented the following appearance:

	1892.	Tons.
January	283,488	
February	286,818	
March	243,159	
April	168,196	
May	87,963	
June	48,472	

The shipments of Cleveland iron for the first six months amounted to only 295,618 tons. As for the blast furnaces, at the 30th of June the number in blast was 316, against 388 in 1891. The imports of iron ore likewise during this period stood at 1,845,194 tons, against 1,703,941 tons, accounted for, not by an extension of the pig iron and steel produced, but by a forced restriction, produced by the strike, of the output of home ores. Turning to the second half of the year, we find that in the Cleveland district the output of pig iron amounted to 1,097,247 tons, the stocks at 74,881 tons and the shipments at 287,869 tons. These figures, although not up to the average, yet show that the Cleveland iron trade almost regained its normal condition, and that the demand had not fallen off. As regards the blast furnaces, at the end of the quarter ending September 30 the number in blast was larger than in either of the two preceding quarters. In the March quarter the furnaces at work were 278, at June 316 and at September 378, showing a progressive growth in the number employed.

Evidently this was for the purpose to some extent of storing stocks, as the shipments show a decrease in quantity. Stocks had been running down in several

kets have in some districts been very firm, prices running low. The following table portrays the tendency of prices for Scotch pig iron, Cleveland bars and steel rails:

	Scotch pig.		Cleveland bars.		Steel rails.	
	1892.	1891.	1892.	1891.	1892.	1891.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
January	2 7 0	2 6 4	5 10 0	4 17 6	4 2 6	4 18 9
February	2 3 0	2 7 3	5 0 9	5 1 0	4 2 6	4 18 9
March	2 0 10	2 5 5	5 10 0	5 15 6	4 0 0	4 16 9
April	2 1 0	2 2 6	5 10 0	5 12 6	4 2 6	4 12 6
May	2 1 9	2 6 6	5 10 0	5 12 6	4 2 6	4 10 0
June	2 1 8	2 9 6	5 12 6	5 12 6	4 2 6	4 10 0
July	2 1 4	2 7 4	5 12 6	5 10 0	4 2 6	4 8 9
August	2 2 6	2 7 2	5 12 6	5 10 0	4 2 6	4 6 3
September	2 2 0	2 7 2	5 10 0	5 7 6	4 5 0	4 5 0
October	2 1 8	2 7 2	5 10 0	5 7 6	4 5 0	4 0 0
November	2 1 2	2 7 9	5 10 0	5 10 0	4 3 9	4 5 0

districts in consequence of the drain upon them necessitated by the coal strike, and rather than close the works, it is probable that the manufacturers have been "stocking" to some extent. The importations of iron ore for the latter half of the past year show also some progress, due partly to the reasons previously given. The quantity was 1,836,787 tons, smaller by some 10,000 tons than the imports in the first half.

As regards steel, the booking of the first six months shows a very extensive contraction both in Bessemer and open hearth, which is reflected in the depression experienced in the steel rail trade and the ship-building industry. The figures for Bessemer steel are as follows:

	Ingots.		Rails.	
	1892	1891	1892	1891
	Tons.	Tons.	Tons.	Tons.
South Wales	216,329	234,397	60,434	70,763
Cleveland	83,530	187,151	36,346	104,288
Sheffield	121,141	150,323	12,995	29,895
Cumberland	100,000	183,312	60,000	141,804
Lancashire and Cheshire	81,137	124,427	41,909	75,668
Staffordshire and Scotland	47,650	43,455	.....	.....
Totals	649,816	923,005	211,884	422,623
Net decreases in 1892	273,189	.....	210,739	.....

The number of converters producing these quantities in the first half of 1892 was 47½ in acid and 17½ in basic steel.

The open-hearth steel industry bears also an impress of the general shrinkage of supply, but not to so great an extent. The output of ingots was as given beneath:

	1892.	1891.
	Tons.	Tons.
Scotland	232,536	239,719
Northeast Coast	190,662	228,501
Wales, North-South	133,907	140,497
Sheffield and Leeds	49,136	60,876
Lancashire and Cumberland	58,727	52,791
Staffordshire, Cheshire, &c.	39,353	38,304
Totals	7 2,341	778,888
Net decrease .....	.....	56,547

During the second half of the year the trade has been no better than in the first half and very clear evidence of this is seen in the exports of railroad material and other descriptions of manufacture. It is the foreign trade of the United Kingdom which has been so disastrously checked on all hands, caused by the influences which we have already mentioned. The exports for the 11 months of the year have been as under:

	1891.	1892.
	Tons.	Tons.
Bar, angle, &c.	199,939	153,912
Railroad	604,507	419,154
Wire	61,874	45,606
Hoops, sheets, &c.	147,262	129,096
Galvanized sheets	149,641	141,923
Tin plates	430,323	361,152
Cast and wrought iron	835,522	265,839
Old for remanufacture	105,693	93,753
Steel unwrought	133,366	136,397
Manufactures of steel and iron	15,623	13,616

The most conspicuous decreases have occurred in the United States, the South American republics, and in the colonies of the United Kingdom, and there seems to be but little immediate hope of revival in these countries. Probably we may leave the United States out of account altogether, except as regards tin plates, as she is year by year releasing herself from all external dependence.

Prices have also partaken of the influence of retrogression, although the mar-

Prices as a whole, therefore, have not been so remunerative in 1892 as in 1891, especially considering that the cost of raw material has been high.

Middlesborough.

In common with other towns in the iron district of the South, Middlesborough, Ky., has had its period of prosperity and inflation, followed later by a collapse of values. The history of this town is too familiar to need rehearsing at this time. Since the advent of the new management, however, much has been done in finishing the work contemplated. The large plant of the Watts Steel & Iron Syndicate, Limited, has been practically completed and one of the furnaces will go into blast about January 10 and the other about three weeks later. It is expected that the steel plant of this concern will be in operation about March 1. The reason for the delay in completing this work was the failure of the contractors. The buildings of the South Boston Iron Works are to day nearing a state of completion. This work was begun two years ago and lay dormant until May, 1892, when work was resumed and has been in active progress ever since. The main building is 520 feet long and 150 wide, one-half of which is to be used for the foundry and the other for a machine shop. The height of the main trusses in this building is 39 feet. The patent storage house is 150 x 70 feet and three stories in height. There are also in detached buildings the boiler house, engine room and coal, coke and sand bins. This plant was designed by the Flynt Building & Contracting Company of Palmer, Mass., and it is claimed that nothing in the South approaches it in arrangement and adaptability, and that few in the country equal it. The machinery to be used in these buildings is to be brought from Boston, where it is stated that 20 carloads are waiting the completion of the works to be sent on. The Mingo Mountain Coal & Coke Company of Middlesborough, Ky., have 250 coke ovens in operation, with a production of 300 tons of coke per day. They are operating two coal mines and are shipping from 600 to 800 tons of coal per day. The coke made here is of a bright steely color and of a uniform and firm structure. It shows about 90 per cent. fixed carbon, 8 per cent. ash and from 1/16 to 1/8 of 1 per cent. sulphur. The coke has been recently much improved in structure on disintegration and now compares favorably with other cokes in this respect. A contract has been made with the Watts Syndicate for nearly the total product of these ovens after January 1, 1893. There are five companies mining coal on the seam at Middlesborough. It is 72 inches in width and lays all above water level. This seam has proven to be one of the best gas seams in the South, yielding 10,000 cubic feet to the ton. It is confidently believed that with the opening of the industries of Middlesborough a new era will begin for that town.

Patents, Patentees and the Public.

Compulsory Licensing and Lapse by Failure to Work.

BY BERNHARD T. VETTERLEIN.

Should not the present system of granting patents for inventions be amended?

The law as it is is not so satisfactory as to merit disinterested support, and it is surely worth consideration whether the defects can be removed by amendments.

Earnest and persistent attempts have been made at intervals to abolish the law and substitute a grant of money by the Government in place of patent privileges, and it is reasonable to anticipate a renewal of the agitation with more or less strength, in view of the well-acknowledged imperfections which are removable and have not been removed. Patent laws are good only when they offer the most equitable arrangement for protecting inventions from plunder, and are at the same time fair to the public.

Any person who has discovered a new and useful art, machine, manufacture or composition of matter, or any new and useful improvement thereof, under certain restrictions, may obtain a patent. The grant is to the author of the invention and for the exclusive right of practicing it for a term of years. The consideration for which the grant is made is the benefit resulting to society by the practice of the invention. Now, during a year a large number of patents are issued, of which some are for alleged improvements and some for trifling alterations of patents in force. The market becomes crowded with patents, few of which may be of any value, but all of which may be productive of embarrassment.

A large number of these unmeritorious patents are never practiced or intended to be practiced, but held in reserve till by some subsequent improvement they become practicable and have a commercial value. The holder of the original patent then has the game in his own hands. This is a genuine grievance, and though the last invention gives commercial value to the series of which it is the crown, the owner is helpless unless he can make some fair arrangement with the proprietors of the anterior patents. It is quite true that an invention when first tried is never complete in all its details, but if the inventor does nothing to perfect it and someone else does, the latter during the life of the first patent is subject to the disposition of its owner. It must be remembered that the greater the success of a discovery the larger will be the gain to the public when the patent expires. Experience often suggests slight but valuable alterations. The public then acquires not an invention which may answer the purpose for which it was intended, but an invention which has been made capable of perfecting the anticipations of its discoverers. To give any one an exclusive right to work his invention is equivalent to trusting that he will devote his time and skill in getting it introduced.

It may also be urged, with good reason, that the owner of a fundamental patent of real merit, as the law now stands, can become the monarch over one field of industry, and refuse to grant a license to make his apparatus, or work his process. Patents are not intended to be monopolies. The statute of monopolies, which removed those "odious, hurtful and nauseous weeds in the fair field of industry," made an express exception for inventors, "so as also they be not contrary to law, nor mischievous to the State by raising the price of commodities at home, or hurtful to

trade, or generally inconvenient." It is said that a monopolist controls the market, but that the owner of a patent privilege cannot force the public to buy the article he manufactures. But the experience of the public is somewhat different from this, and it would be very often difficult, if not impossible, to make a distinction between a monopolist and the owners of many patent privileges.

The law should be amended so as to provide:

1. That the patent shall cease and terminate if the patentee or owner does not make effective use of the invention within a fixed period.

2. For the introduction of compulsory licenses; the amount of royalty to be determined by arbitration when differences of opinion cannot otherwise be reconciled.

The practice of granting patents for inventions prevails over the whole civilized world. In most of the countries provision is made in the law for determining and ending the life of a patent, unless worked within a definite time or by the non-payment of fixed annuities. In some countries there is a clause relating to compulsory license. In the Argentine Republic, for instance, the law is plain and to the point. After quoting the law of this Republic, we shall give the sections of the statutes of other countries bearing on the two amendments suggested in this article.

The Argentine Republic.—Argentine Republic in 1864 enacted the following:

THIRD SECTION, ARTICLE 29.—When such certificates of addition (i.e., for improvements in patented articles) have been obtained by other than the original patentees, they do not confer on their owners the exclusive right of working their invention, except under the condition of paying a premium to the original inventor, the amount thereof having to be fixed by the commissioner, by taking into account the importance of the improvement, and of the part used of the original inventor.

ARTICLE 30.—The original inventor has the option between availing himself of the provision contained in the preceding paragraph and of working the improvement jointly with the improver. If he chooses the latter, a patent of addition shall be delivered to him on the same terms as that to the improver.

ARTICLE 32.—If two or more parties shall apply at the same time for a certificate of addition for the same improvement, and if they shall not come to some arrangement between themselves, no patent shall be issued to either. The same provision applies also to letters patent.

TITLE 5, ARTICLE 47.—All patents duly issued become void whenever the invention has not been worked within two years of the issue of the patent; whenever the working has been interrupted for a similar period, except by circumstances beyond control, &c.

ARTICLE 49.—No special judicial decree of nullity or lapse is required for causing the patent discovery or invention to become public property; the mere fact of nullity or lapsing suffices for authorizing every one to work freely the patent articles.

Austria.—If within one year from the date of the patent, the patentee has not begun to work his discovery, invention, or improvement in the empire, or wherever he has interrupted his work for two complete years.

Barbados.—Work must begin within a period of three years.

Belgium.—The patent must be worked in Belgium within one year from the commencement of working abroad. The time may be prolonged for one year. At the expiration of the first year, or the extension, the patent shall be annulled for omission.

Brazil.—The patent shall lapse, if the patentee does not make effective use of the invention within three years; if the patentee suspend the effective use for more than one year.

By use is understood the effective exercise of the patented industry and the supply of the products in proportion to their employment or consumption. On proof that the supply is evidently insufficient for the needs of employment or consumption, the employment can be restricted to a zone, &c.

Bolivia.—The patent must be worked within a year and a day.

Canada.—The patent is null and void at the end of two years unless the patentee or his assignee shall have commenced, and shall after such commencement continuously carry on, in Canada, the manufacture of the invention or discovery patented in such manner that any person desiring to use it may obtain it or cause it to be made for him at a reasonable price at some manufactory or establishment for making or constructing it in Canada.

Very many of the counties have this section: The inventor of an improvement cannot make use of the improved article while the patent for the principal invention lasts without an authorization from its inventor. Nor can the latter employ the improvement without agreement with the former.

Chili.—For each patent, a proportionate term shall be fixed for the establishment of the machinery, plant or manufacture, on the conclusion of which the patent shall commence to run. If at the expiration of this term the invention has not come into work it shall lapse, as it shall also if the working be discontinued for more than one year.

Colombia.—When not practiced during a whole year the patent is void.

Denmark.—By royal decree the invention must be carried out within a year.

Ecuador.—The patent must be worked within a year and a day.

Finland.—It is necessary to publish a description three times within two months from the day of the issuing of the patent, and within two years to send evidence that the patent is in full working operation. The term may be limited to one year and also extended to, at the utmost, four years, but afterward evidence must be given of continuous working.

France.—None but the patentee or person interested through him . . . can during one year legally obtain a patent for an alteration, improvement or addition, &c. Nevertheless, any person who shall wish to obtain a patent for an alteration . . . may during the said year make an application, which shall be transmitted to and remain deposited under seal. . . . At the expiration of that year the seal shall be broken and the patent delivered. Preference is given to the original patentee for all alterations, improvements and additions for which he shall have demanded during that year a certificate of addition.

The patent must be worked within a term of two years, and if the working is discontinued for two consecutive years, the patent ceases and determines.

Germany.—If the patentee fails to work his invention in Germany to an adequate extent, or at least to do everything that is necessary to insure its being worked, a patent can be declared void after the lapse of three years.

Whenever the grant of licenses to others to use the invention appears to be demanded in the public interest, and the patentee nevertheless refuses to grant such licenses upon adequate compensation and good security, the patent lapses.

Great Britain.—If on the petition of any person interested, it is proved to the Board of Trade that by reason of the default of a patentee to grant licenses on reasonable terms, or the patent is not being worked in the United Kingdom, or the reasonable requirements of the public with respect to the invention cannot be supplied, or any person is prevented from working or using to the best advantage an invention of which he is possessed, the board may order the patentee to grant licenses on such terms as to the amount of royalty . . . as the board, having regard to the value of the invention and the circumstances of the case, may deem just. There is also a provision for the forfeiture of patent on non-payment of annuity.

Guatemala.—The time is limited to two years for the establishment of the machines; . . . forfeited if, after commencement, the working is abandoned for more than a year.

India.—The patent lapses on failing to grant licenses on reasonable terms—same as in Great Britain—substituting the Governor-General in place of the Board of Trade. The Governor-General may order the inventor to grant, or may himself, on behalf of the inventor, grant licenses on such terms as he may deem just.

Japan.—Persons that are desirous of obtaining patents for articles that are improvements upon other patented inventions must secure the consent of the original patentee. If the original patentee should refuse his consent, and the Minister of Agriculture and Commerce deems the refusal obstructive to the improvement of the inventor, he may grant the improver special permission to use the original invention, together with the improved part. In such cases . . . the Minister shall cause the improver to give approximate sums of money to the original inventor by way of compensation. The patent is void unless practically publicly applied within two years, or suspended for two years thereafter.

Liberia.—The patent must be worked within three years, and refusal to license works forfeiture.

Norway.—The proprietor of a patent shall during a period of two years . . . have the sole right of obtaining a patent for improvements. Applications by others must be kept under seal for that period. The patent must be worked within three years, and is forfeited if the working is discontinued for one year.

Orange Free State.—Non-use for two years works a forfeiture.

Peru.—The patent must be worked within two years, or period stipulated in the privilege.

Switzerland.—The patent lapses if not carried into effect in the third year.

Queensland and South African Republic.—The law is the same as in India.

Uruguay.—If it be a stranger who obtains a certificate of addition, he shall only enjoy the right to work his invention upon the condition of paying to the first inventor a premium, the amount of which shall be fixed by two experts appointed by the parties interested, with a third in case of disagreement. The executive fixes the time for the working of the privilege at the time of the granting of the patent.

Venezuela.—The patent is canceled when annual payments are not made, or when the working is not commenced within two years or discontinued during two years.

Sweden.—Must be worked within three years to an adequate extent. If working is abandoned for one year the patent is forfeited.

Portugal.—The patent for an improvement cannot be made during the first year of the patent granted for the principal invention, save to the person who obtained that patent. Any one who does not carry out his invention within two years . . . or has ceased to use it for two years consecutively . . . shall forfeit his said patent.

Russia.—Patents shall not be granted for trifling or unimportant discovery, invention or improvements, indicative only of inventive genius, without offering any new advantage or utility. The privilege must be put into completed practice or execution during a specified term, and lapses unless before the expiration of six months thereafter there is presented to the proper department proof that it has actually been put into practical execution.

South Australia.—Patents cease on non-payment of annuities at the expiration of three years. They are also liable to be revoked after the expiration of three years if it appears that either the patentee or his

licensee, or his assignee, has not before that time used the patented invention to a reasonable extent for the public benefit.

New Zealand.—Annuities are payable in five years. The invention must be brought into actual, practical use within the space of two years from the date of the patent.

Spain.—The patent must be worked within two years in Spanish territory, and proved. Omission to operate the invention for one year and a day thereafter forfeits the patent.

The sections of the laws of the several countries quoted should be sufficient to show how other civilized nations look upon patents. There is not a country, small or large, which has not a patent law and some provision bearing on the amendments suggested. Of course, even with the corrections intimated, the law would not be as it should be. Two amendments are sufficient for present consideration.

It is quite true in general and it would be quite logical to say that licenses should not be granted at all, but if patentees have the power to grant licenses they ought to be compelled to grant them to whomsoever shall offer a fair percentage in return. It can be argued that, were it in every one's power to work a patent on the payment of a certain sum, there would be less incentive to the infringement of patent rights, so called, and consequently less necessity for harassing litigation and expense. Of course, a patentee can reply that the right of property in his invention having been accorded to him by the office, he should be left in an untrammelled position regarding any disposition he may wish to make of it. He ought to be left free to dispose of it, and equally free to refuse to share his rights with any one except at his own time and on his own terms. But a compulsory license, equitable both to the inventor and to the public, with a compulsory working limit, would meet the requirements. The preliminary examination is of very little use. The same system prevails in many countries. It was, and is yet, supposed to be a preventive to litigation. It is and would be impossible for any Patent Office, or its examiners, to be acquainted with the details of every process or manufacture. If the Government could guarantee the patent, then a preliminary examination would be of value.

The *Journal of Political Economy* is an excellent new quarterly, which has just been started by the University Press, University of Chicago, Chicago, Professor J. Laurence Laughlin being the editor. Its main object will be to promote the study of the more practical questions of railway transportation, finance, agriculture and kindred subjects in economics and statistics.

E. H. Risley, of Utica, N. Y., who is the attorney in the interests of the new Arthur Savage gun, has returned from Hartford, Conn., where he has been consulting representatives of the Colt's Patent Firearms Company of that city, in relation to adopting the gun. It is understood that the concern looks with favor on the new gun, and will probably enter into a contract to manufacture Mr. Savage's invention.

The newly appointed Canadian Premier, Sir John Thompson, does not propose to abandon the "national policy" advocated by the late Sir John Macdonald. In a speech delivered in Toronto he stated that if the American Government wished to get a trade treaty with Canada it would have to be on far different terms from those proposed to the Canadian Ambassadors in Washington four years ago. This means that the Canadian tariff will be maintained.

WORLD'S FAIR NOTES.

Display by the Army.

To the War Department was allotted about one fifth of the floor space of the Government Building. This came to be located in the southeast corner of the structure and the space was divided up between the several general divisions of the service. The staff detailed to make the exhibit by the Secretary of War was Major Clifton Comly, in command, representing the War Department; Capt. John F. Rodgers, Quartermaster; Capt. William L. Marshall, Corps of Engineers; Surgeon La Garde, Medical Department; Capt. A. H. Russell, Ordnance; Capt. R. E. Thompson, Signal Corps; Lieut. H. L. Harris, Artillery.

For over a year these officers have been devoting their time to preparing the displays. Everything is now in shape and before long shipments will begin from Washington and other sources from which material is to be drawn.

In a general way the ordnance department will be perhaps the most interesting. The longing in the heart of the average civilian to see a big gun will be fully gratified. One throwing a shot twelve inches in diameter will be in the Government Building. It will weigh 50 tons. Smaller cannon for field service will be plentiful.

The actual manufacture of rifles will be carried on in the exhibit. Bullets and cartridges will be made in the sight of the multitude. Torpedoes for use in military operations will also be manufactured, but when people want to see torpedoes that are torpedoes they must visit the battleship "Illinois," where the Navy Department has its exhibit. Care has been taken not to have the two departments overlap anywhere. Of course, the ammunition will look like the real thing, but the powder would not explode, not even burn. No army officer, however brave, would care to have real gunpowder and dynamite flying around among workmen in a crowded building. The spectators, however, will not know the difference.

To show the construction of heavy ordnance by actual work was not feasible, but it will be exhibited in varied phases, so that a good idea of the process can be gleaned. Only the processes generally known can be shown, as the War Department is not accustomed to unfolding its secret methods on the housetops. A testing machine to prove iron and steel to the extent of 100 tons to the square inch, doing its work as perfectly as if in an arsenal, will also have its place in the ordnance department. Nothing will be lacking from a silver-mounted revolver to the 50-ton gun. Gatling guns will not be the least important.

The signal corps will show how communication in the field is kept up by telegraph and telephone. The utility of the balloon in military operations will be demonstrated beyond a doubt, if one should now remain. These balloon tests will be extremely curious to non military people.

In the signal corps' exhibit will be some 85 magnificent pictures of arctic scenery taken by the Greeley arctic expedition. They are among the most highly prized archives of the corps. All the appliances for using signals will be included in the exhibit, and great pains have been taken to make it thoroughly popular. It was a difficult task, but it is said there is no doubt about it being well done.

The post hospital will contain 24 beds, and will be an exact reproduction of the regulation hospital at a military post. It will also contain a medical scientific exhibit, which will be of great interest to physicians at least. Then there will be

the tent hospital for actual service on the field of battle. The ambulances for carrying the wounded from scenes of carnage to the field hospital will be there. The appliances in use by army surgeons to save life before the hospital can be reached will be fully represented. So complete will be the exhibit of the medical department that the surgeons could take the field for active service directly from the Government Building.

In service it is the quartermaster's duty to provide food and clothing, and the quartermaster is quite a man in extensive operations, where a base of supplies must be maintained. In that department of the army's exhibit will be seen how large bodies of troops are fed, how they are clothed, and the way transportation is given.

The engineer corps was greatly handicapped in preparing its exhibit by the nature of things. While the other branches of the service could bring things to show, the nature of the engineers' work precluded this. A canal might be the height of engineering skill, but it could not be brought to Jackson Park. A bridge making its designer famous must remain where it was built. Since river and harbor improvement was begun by the General Government over \$225,000,000 has been expended under the direction of the engineer corps. There are now 747 different pieces of work under way. It is scattered from Portland, Maine, to San Diego, Cal.

Capt. Marshall, the United States engineer at Chicago, has been a year bringing the exhibit of his corps together. He has written numberless letters to brother officers asking for pictures of Government work in their districts. Cordial has been the co-operation extended him. The negatives taken under the direction of the corps were sent to Capt. Marshall.

The space assigned the engineer corps was under the gallery in the extreme southeast corner of the Government Building and 28 windows open into it about 7 feet above the floor. What might have been an unattractive space has fallen into Captain Marshall's plans most admirably.

Three transparencies, one above the other, will hang in each window. The transparencies will be draped at the side, and will resemble panels in a curtain. The transparencies will represent many of the most noteworthy feats in army engineering. The one showing the largest stone arch on the globe, in the Washington aqueduct system, and another, of the movable dams on the Ohio, are certainly striking. There are 84 in all of the transparencies.

Over 100 large framed photographs will hang between and under the windows. Several hundred smaller photographs will be shown in the albums, a full description of the Government work represented appearing on the opposite fly leaves. A huge transparency, 16 feet long, will give a panoramic view of Chicago Harbor and Government works here. The view was taken from the lighthouse and covers the field of vision from northeast to west. Far to the southward the exposition buildings are seen. Tugs are towing in schooners and a steamer is just leaving port. A great fleet of shipping is under the break water. Most people will get their first idea of what Chicago Harbor entrance is like from this beautiful transparency, which is now almost ready for the artists.

The geological survey will have some handsome transparencies in the Government Building. They will be of natural scenery mostly. The illustrations of the engineer corps will be confined to works of the corps.

Some models of harbor work will also appear in the exhibit. Fixed torpedoes, so far as the engineering service uses them, will be represented, but no especial

show of torpedoes will be attempted. While most of the engineering works of the army are for purposes of peace, a full exhibit of military bridges and lines will find a place in the corps' space under the gallery.

Construction Goes on as Usual.

The cold weather has not delayed construction on the new buildings to any great extent. The cost of breaking ground for the foundations, however, has been materially increased, and the number of men required in that work has been largely augmented, the frozen ground being almost as solid as rock. Fully 200 men were engaged last week in putting down the foundations of the building commonly known as Liberal Arts, but which is termed the Anthropological Building. It is located between the Forestry and Agricultural buildings.

In Machinery Hall, where time counts for so much these days, the cold stopped all concrete and brick work around the boilers and engines. The platforms for the engines are rushed at a great pace. The ceiling of the building is nearly ready for plaster. Between 300 and 400 men are employed in the building. The painting of the interior of Manufactures Hall goes on regardless of weather. The calcimine machines send calcimine through the hose just as well when the thermometer is at zero as in midsummer. The west part of the hall is now entirely painted, and the wonderful effects of that space upon the eye become even stronger, since the interior is all of a light hue, except the iron supports. Week in and week out nearly 100 painters have labored. Their work is now nearly complete, from the wooden columns to the dome 245 feet above. Within ten days the hall will be ready for the installation of exhibits.

A force of carpenters were employed last week taking up the coverings which had protected the hardwood stairways of the Agricultural Building during the period of construction. The floors have been chalked off for exhibits and every post and every space has its number. The hall would be entirely ready for the oncoming flood of material were there not little snow banks on the floor here and there. They tell of spots in the roof which must be patched before it will be safe to place much merchandise in the building. Painters have completed their work at the Fisheries Building and the interior looks trim and tasty. Nothing more is to be done and material can be received at any time. Mines and Mining and Electricity buildings are also ready. Rapid progress has been made on the electric elevated road the last fortnight. The standards for nearly the entire line are up and track laying has begun in the rear of Machinery Hall. About the only thing that the cold has brought to a full stop is dredging in the lagoon south of the Agricultural Building. The dredges are frozen in ice 1 foot thick. The old whaler "Progress" is as solidly imbedded in ice as if it were again in the arctic regions. The scaffolding has been taken down from the main entrance of the Administration Building, and the first clear view of the architectural beauty of that structure obtained. It was all that had been promised for it. Enough of the scaffolding has been removed from the main entrance of the Transportation Building to discover its artistic beauty. The decoration alone cost \$15,000. The last building to be erected by the fair will be the Public Comfort Building. Work will begin the coming week.

Space to be Allotted at Once.

Every available foot of space in the big buildings will be practically awarded to intending exhibitors within the next ten days. The ultimatum has gone out from the Director-General's office that the chiefs

would be expected to allot their space at once and end their troubles. This means a great slaughtering of applications, a dread of which has caused whatever delay that may be complained of. In the Manufactures Building there are possibly ten applicants to one that can be accommodated with a location. Chief Robinson of the Machinery Department has received 1200 applications and can accommodate not more than 500. Other chiefs have been obliged to scale down. Chief Allison has had the most difficult problem since he has had the greatest surplus of applications.

Some of the directors have felt that they were unduly criticised for delay because of the fact that the special building originally intended for educational exhibits was not contracted for until recently and the further fact that they have been unable to agree with the National Commission upon the adoption of a set of rules for the government of the exposition and its exhibitors. These rules for the last two months have been clamored for by intending exhibitors and especially by the World's Fair commissions of foreign countries. Foreigners have been anxious to know just how much they would have to pay for power, light, heat, &c. The rules will in all probability be adopted this week.

Mr. Allison of the Manufactures Department and Dr. Peabody of the Liberal Arts Department have necessarily been delayed because of inability to provide promptly for the extra building which was conceded by the directors a few days ago. That structure will now be used for the Department of Ethnology and for housing the exhibits of the Bureau of Music, the Bureau of Charities and the Bureau of Hygienic Exhibits. It has added nearly 200,000 square feet of space to that in the Manufactures Building. Until it was known whether this extra building would be provided Mr. Peabody and Mr. Allison could do nothing definite. Since then Chief Peabody has closed up all the space for educational exhibits, and will begin next week on the bureaus.

The Great Electric Cranes.

The first to be installed of the three electric traveling cranes for Machinery Hall was made by the Yale & Towne Company of Stamford, Conn., while the other two are to come from the establishments of the Morgan Engineering Company of Alliance, Ohio, and William Sellers & Co. of Philadelphia. Each crane will be operated on a track 1400 feet long, has a carrying capacity of 20 tons and weighs about 50 tons without load. The Yale & Towne crane has two trolleys, each of 10 tons' capacity. It is operated by five motors of the United States Company's Manchester slow-speed type. One, a 25 horse-power machine, suffices for the bridge travel, while two 10 horse-power motors, one on each trolley, operate the hoists. The cross travel is taken care of by a 3 horse-power motor on each trolley. Current is taken from two No. 2 B. & S. wires by Thomson-Houston under-running trolleys. The crane can travel at the rate of about 500 feet a minute. During the fair proper it will be fitted up for the accommodation of passengers, of whom about 300 can be carried at one time. An excellent opportunity will thus be given for viewing the busy scene beneath.

New York Mineral Exhibit.

One of the prettiest structures which will be erected by New York State will be that for the mineral exhibit. Architect Isaac G. Perry has just completed the drawings for it. They call for a rectangular pavilion in pure Roman Ionic architecture, 31 x 61 x 23 feet high. The four corners are to be surmounted by balustrades; the caps of the fluted columns are

to be richly carved; there will be an ornamental frieze, and the spandrels will be decorated with mining implements worked into the ornamentation.

The structure will be of white and gold. There will be a balustrade all about the floor, except across the front. The front, or entrance, is of a concave half circle. Directly opposite the entrance an obelisk will rise to a height of 30 feet. This will be 3 feet square at the base and taper gradually to the top.

It will be composed of rocks illustrating the geological formation of the earth as has been developed by research.

Transporting Russian Exhibits.

A Copenhagen cable dispatch says that the Russian Government has just executed a contract with the Thingvalla Steamship Company, and also another with the United Steamship Company, for transporting to America and return all exhibits from the Russian Empire to the World's Fair at Chicago. It is officially stated that the collection of exhibits from Russia will be the most extensive ever sent from that country to any international exhibition. Unusual interest is expressed in the shipment, which will probably be effected from Port Libau.

The Brazilian Exhibit.

The preliminary exhibition of exhibits at Rio Janeiro, intended to be sent by Brazil to the World's Fair, has been successfully opened, and United States Minister Conger, stationed at Rio Janeiro, predicts a fine representation at Chicago.

THE WEEK.

The Governors of New York and Pennsylvania in their annual messages refer to the labor riots of last summer and argue that the expenses should be borne by the county in which they occurred. The military employed at Homestead cost \$430,000, while Erie County, New York, is liable for \$180,000. The total cost of the military employed at Buffalo was \$192,647.30.

Ex-Mayor Hewitt favors the placing of a third track on the Manhattan Elevated Railroad.

Baltimore has just closed a very prosperous year. Her exports amounted to \$93,000,000, an increase of \$14,000,000 over the previous year.

A three-track bridge with two draws will be built over Newtown Creek by the Long Island Railroad Company.

The party of 78 American manufacturers who are preparing to visit the City of Mexico will rendezvous in St. Louis, February 1, the New York delegation leaving this city January 31. Several large cities in Mexico are on the route prescribed. The return will be by way of Vera Cruz, Yucatan and Havana.

New York City is far from attaining her largest growth. Last year 3000 new buildings, costing nearly \$60,000,000, were added.

The small earnings of ocean shipping during the past year help to reconcile Americans to their comparatively small interest in that kind of property. Freight rates have been lower than were ever before known, particularly from the west coast of South America and the East Indies. Vessels returning from San Francisco and Australia were unable to procure cargoes in some instances. One cause is the competition of tramp steamers, but underlying all others is the excess of tonnage afloat. The maritime provinces of Canada are transferring their unprofitable fleets to Scandinavians.

The dynamite gun is coming to the front again. Strange as it may seem, Commander Folger, before severing his connection with the Ordnance Bureau, formally approved a design for a first-class torpedo boat, with a pneumatic dynamite gun, to be used as a torpedo thrower.

The manufacturing statistics in the report of the Connecticut Bureau of Labor Statistics for 1891 represent 40 lines of industry, having an invested capital of \$134,652,000, producing goods valued at \$159,888,000, and affording employment in productive labor to 90,850 people, to whom \$89,500,000 was paid in wages. On the output there was a net profit of \$13,716,000, which is 10.18 per cent. on the capital employed.

The scheme of Edward Watkins for tunneling the British Channel between England and France is again being talked about. The work was advanced 2200 yards, when it was stopped by Government orders. The chalk formation in the portion already made was drilled by a circular disk of iron cutters, worked by a compressed air engine, by means of a shaft, with bevel wheel gearing, the shaft and engine extending for a length of 30 feet. The cutting disk makes two revolutions per minute and is fed forward $\frac{1}{4}$ inch at each revolution. The total advance of the whole face of the boring is $\frac{1}{4}$ inch per minute. The cost of the work is computed at \$80,000,000.

The Boston & Maine Railroad management have decided to build in Boston a commodious union station in the modern style of architecture.

The Government agricultural report for January indicates that the wheat crop just garnered is slightly above an average one in yield, and in volume has only been exceeded in 1891, 1884 and 1882, though the crops of 1889 and 1890 nearly equaled it. The area as estimated is 38,554,430 acres; product, 515,994,000 bushels; value, \$322,111,881.

The grain trade of Philadelphia last year almost doubled. The exports of wheat were 10,000,000 bushels and of corn over 19,000,000 bushels.

A special French naval commission to test the use of petroleum fuel in torpedo boats rendered an adverse decision.

The Transcontinental Association disbanded on the 31st ult.

The statement of commerce through the St. Mary's Falls Canal for the season of 1892 again shows a large increase over any previous year, the freight tonnage of 11,214,333 net tons being 26 per cent. in excess of the preceding year, and the estimated value of merchandise being \$135,000,000, compared with \$128,000,000 for the previous year, the increase extending to all important articles except copper and building stone.

The New York Chamber of Commerce has declared in favor of the proposed amendment of the Interstate Commerce law which would legalize pooling agreements between competing railroad lines. The resolutions adopted say in effect that, while the principle is not approved, the law has been persistently violated. Now the Chamber would sanction pooling and see how it works.

It is said that there will be no immediate attempt to reorganize the Transcontinental Association, which went to pieces last October. The majority of the interested roads are in favor of some sort of agreement by which demoralization of rates may be guarded against, but they are inclined to experiment with something less expensive and cumbersome than an organization on the plan of that just disbanded.

The new gold discoveries in Utah, by attracting settlers, are preparing that territory for Statehood.

The aggregate investment of capital in new business in Great Britain during the past year was the smallest in any year since 1885, and a comparison shows that business has been much duller than in the United States.

A bill introduced in Congress and now under discussion by the Judiciary Committee has for its object to exempt drummers for commercial houses from every sort of tax and license, unless it is imposed by the State upon her own citizens doing business within her borders. The author of the bill thinks that the principle ought to be embodied in a general law, which will override any State laws now in force.

The Canadian Pacific Railroad is blocked with snow worse than for five years.

The Cramps are said to have received definite information that they will build both of the great war vessels, the "Iowa" and "Brooklyn," for which contracts have not yet been awarded, making altogether 12 ships which that concern will have built for the navy. The amount of money which the Cramps will have been paid for this work—that is, the aggregate amount of the contracts awarded them to date, including the two for the battle ship and the cruiser—is \$25,139,000.

The great project of widening Elm street, New York, now to be carried into effect, will make a new route for traffic parallel with Broadway, through the heart of the city, about the same width as that thoroughfare. In cutting through the blocks many buildings will be condemned and destroyed. The total cost of the condemnation to property is estimated at \$2,962,159.

Shipments of silver to foreign ports are becoming important. The total since January 1 exceeds \$1,000,000. This fact and the shutting down of mines helps to stiffen the price of bullion, besides relieving the pressure for gold wanted on export account.

The Dominion financial statement for January boasts of constantly increasing revenues and a decreased public debt.

The new cable for the traction railroad in Philadelphia is 5 miles long and said to be one of the largest ever made.

Governor Russell of Massachusetts says in his annual address that the establishment of closer trade relations between the United States and the Dominion of Canada would give to merchants and manufacturers the opportunity for a large extension of trade, by opening to them an important and profitable market, and an abundant supply of the raw materials necessary for the various industries.

A cargo of packed meats from Kansas City arrived in New Orleans and was immediately put on board a steamer for Rotterdam, opening a new channel of trade.

The harbor of Tampico, recently deepened at large expense, is already shallowing so much that large vessels cannot enter.

The city debt of Boston is \$30,500,000. During the coming year \$4,000,000 can be expended for improvements without adding to the amount.

The project to secure a deep water harbor at Corpus Christi Bay is to be carried into execution without further delay. Engineer E. H. Roper estimates the total cost, including docks and warehouses, at \$2,000,000. The trans-Mississippi regions expects to derive therefrom substantial benefit.

The Iron Age

New York, Thursday, January 12, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Balance of Trade.

One of the most puzzling questions which confronts those who aim to study our trade movement is the "balance of trade." The fact that it has been apparently in our favor for years without bringing us large shipments of the precious metals, and of gold in particular, may seem inexplicable to a good many business men.

The figures just issued by the Bureau of Statistics show that the excess of exports over imports was \$68,518,275 in the fiscal year ending June 30, 1890, that it was \$39,564,614 for the following year, and rose to \$202,875,686 in the fiscal year ending June 30, 1892. In other words, the export movement of merchandise in three years apparently exceeded the imports by nearly \$310,000,000.

In the precious metals the excess of exports was \$18,172,094 in 1889-1890, \$72,694,195 in 1890-1891, and \$18,351,846 in 1891-1892, or a total of excess of exports in three years of \$104,217,635. From this must be deducted an excess of imports of silver and gold in ores and matte of about \$22,000,000.

Here, then, we have an apparent excess of exports over imports of very nearly \$400,000,000 in three years. Even this does not cover it all, because, as is well known, our export statements of merchandise do not cover the total shipments, overland, to Canada and Mexico, and because, notoriously, a good many goods for certain countries are not invoiced at their full value.

But even waiving these points, we are confronted with a "balance of trade" in our favor of nearly \$400,000,000 in three years. The usual explanation given is that this account has been balanced by the return of American securities. It has become quite the fashion to allude to this surrender of the holdings of foreign capital in American railroads and industrial undertakings as one of very great magnitude, and hundreds of millions are glibly transferred to this side of the Atlantic in this manner.

We believe that this is taking a very exaggerated view of a movement which, undoubtedly, is taking place. We are led to this opinion because we are convinced that the value of our imports is very greatly understated. On all articles on which an ad valorem duty is assessed the invoices, upon which the import returns are based, are given in the market values at the point of origin. On goods upon which a specific rate is levied, the temptation to invoice as low as possible is

not so great. Still the figures at which the valuations are entered in our import statistics are very far below the prices at which settlement must be made. It may be said, in a general way, that the values which go into our import statistics do not include a large share of the profits of foreign producers, which we pay. They do not take into account the cost of inland carriage abroad nor the ocean-freight moneys which we must pay.

It is generally recognized that there are two minor causes which contribute to swelling an apparent balance of trade in our favor. These are the remittances on account of interest and dividends on foreign investments and the sums drawn from home by Americans living abroad.

It is safe to say that the undervaluation of our imports and the amounts forwarded abroad sweep away a goodly share of our much admired balance of trade and leaves the great flood of returning American securities a stream of relatively modest proportions.

Coal Combine Methods.

Some of the methods employed by the alleged coal combine were elucidated last week in a manner that must have been extremely disagreeable to the so-called Reading interests. In an examination before the Congressional Committee on Interstate Commerce the testimony of John C. Haddock, one of the most successful independent operators, was directly to the point which in most investigations heretofore has been adroitly evaded. Congressman Coombs of Brooklyn, who occupied the chair, wished to know how it is that those coal operators who control lines of transportation are likewise able to control coal production, even reaching out so far as to drive independent miners from the field, should they be inclined to employ harsh measures, or "freezing out," as the process is sometimes called. The mines owned by Mr. Haddock turn out about 500,000 tons a year. He had resisted all efforts to draw him into the pool and he had never attended the meetings at which the prices and output are fixed. Most of his coal had been shipped to tidewater, at Hoboken, under a contract with the Delaware, Lackawanna & Western Railroad. Under this contract he paid, as freight, one-half of the net average price obtained at tidewater by the railroad company for their own coal, there being a clause by which he got the benefit of any reduction which the railroad may make to other shippers.

In answer to direct questions, Mr. Haddock stated in effect that although he was in no sense a party to the combine he was well informed respecting the character and objects of the meetings of the so-called "sales agents" of the coal-carrying roads. He had noticed that "the price made by the various companies immediately after one of these meetings would tally exactly with the price agreed on at the meetings. So would the price in the circular issued at once by one or another of the roads. The prices of coal would be abso-

lutely uniform on certain grades of coal. This showed beyond doubt the fact and effect of the agreement at the meeting."

The witness being independent of any agreement made at the meetings referred to, it will be seen that the question was decidedly pertinent, "How could these coal-carrying roads limit your production?" The witness replied: "By withholding the necessary supply of cars." He would be notified that it had been decided to limit the supply of cars, and the plea made was that "there were none available." The restriction of cars was, of course, equivalent to a restriction of the coal supply, and these two measures are equally efficacious in upholding prices. By the methods indicated, as stated by the witness, the coal-carrying roads practically have it in their power to compel independent producers either to merge their interests with those of the pool or to retire from business, at their option. The revelations made respecting the alleged "shortage of cars," so often complained of as a reason for exacting higher prices from the consumer, are timely with reference to pending investigations concerning the trade, and will doubtless have due weight in Congress, as in the courts.

The pretext often given for an advance is seen to be of a gauzy nature. Under ordinary circumstances it is not to be supposed that individuals would voluntarily place themselves in a position to suffer the consequences of knowing too much—that is, to be subsequently crushed out as the penalty of giving themselves away. It will be remembered that the protracted suit of the independent coal miners Coxie Brothers for alleged discrimination in freight charges, ended in practically nothing beyond verifying their allegations, and to this extent forming a basis for further litigation. It would now seem that testimony in support of the charge that laws have been wantonly violated is accumulating beyond the power of resistance.

One of the most significant signs is the withdrawal from the Reading management of the Lehigh & Wilkesbarre Company, who mine about 3,000,000 tons a year, together with the equivocal position of the New Jersey Central, which, like the former, is under the presidency of Mr. Maxwell. It will also be noticed that the Governors of Pennsylvania and New York alike score the combine severely in their messages. The rising tide of sentiment hostile to combines is constantly gaining strength.

The Scrap Trade Being Localized.

Western scrap-iron merchants are decidedly interested in the localization of their trade, which is becoming more pronounced every year. The latest development in this direction is connected with the foundry trade of St. Paul and Minneapolis. Cast scrap from that section no longer seeks a market in Chicago and vicinity; but, on the contrary, the intermediate territory is being drawn upon to meet the requirements of the foundries in and about

the twin cities. Other descriptions of old material are also moving in a different direction from that which they have long traveled, and new enterprises starting or proposed in the Northwest bid fair to emphasize this change still more in the near future. This is, of course, one of the necessary incidents of the spread of manufacturing establishments over a wider area, but it escapes attention in considering the commercial changes then brought about. Transportation lines are alive to its importance, however, as many of them find a source of considerable revenue gradually diminishing, while others, in the new consuming centers, are correspondingly benefited. An advantage is realized by those who have old material to sell in close proximity to these new markets, as they are able to secure better prices than when a long haul lies between them and the consumer.

Shall We Stop Immigration?

A very vigorous discussion is likely to grow out of the propositions now before the country to limit immigration, or possibly to stop it entirely for the time being. The question is presented in two aspects. There is a sentiment which is gaining ground quite rapidly, that some restrictions are needful to keep away the more undesirable class of foreigners. This may be regarded as the broader undertaking which is dictated by considerations of expediency affecting our future for the next generation. Other propositions, more limited in their scope, look to dealing with the dangers incident to a possible reappearance of cholera. Some very radical plans are being put forward, all of which aim to deal with the one contingency, and are intended to possess only temporary force.

Measures adopted to protect us during the current year are not likely to find general favor as methods suitable for permanent or prolonged enforcement. Still, their acceptance will obtain some assistance from the contemplation of the broader question. Accessions to the ranks of those who advocate extreme measures for the current year are pretty sure to come from the malcontents who object to the present lack of restrictions upon immigration.

The demand is being made that this year we must close our ports entirely to immigration in order to protect ourselves against a possible invasion of cholera. It is urged that the strictest quarantine will not effectually guard us against danger. Whatever the merits of such a claim may be, since there is conflicting expert testimony on it, there can be little doubt that the idea is very prevalent.

The injurious effects of a plague are largely the outgrowth of sentiment and it must be dealt with in a spirit which will give general assurance and do away with the possibility of a panic of fear. The great mass of the community is sure to be governed by good sense, but a large percentage of the population is unreasoning and must be impressed by vigorous measures.

That is the line of argument pursued by the advocates of a total suspension of immigration during the current year. It is demanded as a means of averting the disastrous effects of a panic. It is urged that those immigrants whom we would be eager to welcome as an addition to our working population are probably in the position that they can well afford to wait another year before they leave their native land. It is contended that for this reason we are not likely to lose any considerable number of them in the long run.

The principal opponents of drastic measures are the men who hold that any quarantine is useless and those persons who, on the contrary, believe that it can be made completely effective. Then there are the interests chiefly representing certain sections, who believe that they must have settlers, good people if possible, indifferent or bad newcomers if necessary.

The question which the business men throughout the country must decide upon is, whether their interests will suffer from a sharp restriction or a complete stoppage of immigration. A pretty large share of the inflowing tide of humanity consists of common labor. If a scarcity is to be created, which will be more injurious than the effect of sentiment growing out of possible dangers, then the demands will be resisted. We believe that on the whole a few months of a curtailed supply would not be seriously felt.

The sums of money which immigrants bring into this country for the purchase of lands and of implements and supplies are not as large as they were at one time. The low cost of transportation has induced a very much poorer class to come to us, so that a year's loss of such an accession of new money will not be as keenly felt as years since.

A simple balance cannot be drawn which could bring home to us clearly whether we would be losers, and if so, how large the loss would be. On the other side of the book, we have the advantage of escaping a possibly shadowy danger. We would also bring to a crisis one of the burning questions of the day. On the other hand, we have the concrete disadvantage of driving away settlers, common labor and skilled artisans, of whom a good many would be very valuable additions to our population and would bring to us considerable sums of money.

Car Building in 1892.

The year which has just closed was not a prosperous one for the car building industry. This notwithstanding the large crops of 1891 and 1892, as well as the prospective World's Fair business. In 1891 95,500 new freight cars were constructed; in 1892 the number was 93,200. This not only shows a falling off in the actual equipment, but reflects a policy of retrenchment, which becomes the more apparent when we consider that a part of this equipment was imperatively demanded for use during the World's Fair. The increase in the number of passenger cars this year was much greater than last, there

being 3795, against 1636. The figures of both 1892 and 1891 show a decrease as compared with those of 1890, when 103,000 freight cars were built.

It has been argued that the reason why the railroad companies purchased so sparingly of steel rails was the existence of the combination and the high prices. Excessive cost does not apply to the car industry, as competition has been very assertive, and the makers will hardly have a fair margin of profit. Consequently, we are led to the conclusion that another and more potent influence has been operative—namely, a lack of funds. It is appalling to contemplate what the result would have been upon the iron and steel industry had the railroads not enjoyed two good years in 1891 and 1892. Their provision for equipment has only been delayed, and its coming is inevitable, providing the standard of the American railroad is to be maintained.

PERSONAL.

Reginald Canning has withdrawn from the firm of Reginald Canning & Co. to accept the post of assistant to the president of the Jackson & Sharp Company of Wilmington, Del.

William B. Turner, general superintendent of the Schenectady, N. Y., plant of the Edison General Electric Company, has resigned his position. He intends soon to erect works for manufacturing couplings, hangers, &c., probably at Schenectady.

Frank C. Roberts, civil engineer of Philadelphia, has taken into partnership J. B. Miles, who has been his principal assistant for two years. The new firm will be Frank C. Roberts & Co.

R. W. Aldrich, superintendent of the Goulds Manufacturing Company, Seneca Falls, N. Y., and Samuel A. S. Wormsted, foreman of the pattern room, will soon enter into a partnership at Buffalo, N. Y., to engage in mechanical engineering.

E. P. Jennings has become associated with Charles F. Howe of Duluth, Minn., as partner in the business of analytical chemists. The chemical department of the new firm of Howe & Jennings will be under his charge and he will act as the engineer in connection with work on the Menominee range and in the Rocky Mountains. Chas. F. Howe will continue his business as consulting and mining engineer.

Joseph D. Weeks of Pittsburgh has resigned as special agent of the census. He was in charge of the statistics on coke and glass.

John Thomas has resigned the post of general manager of the Thomas Iron Company of Hokendauqua, Pa.

W. L. Cowles, who has been connected with the Youngstown Bridge Company of Youngstown, Ohio, since the organization of that concern, has resigned his position and accepted the position of assistant superintendent at the North Works of the Illinois Steel Company.

The many friends of H. O. Bonnell, the well-known iron manufacturer of the Mahoning Valley and of the firm of the Mahoning Valley Iron Company, at Youngstown, Ohio, will regret to learn that he is seriously ill, and grave fears are entertained for his recovery. About two weeks ago Mr. Bonnell was stricken with nervous prostration, and on Saturday, the 7th inst., he was attacked with heart trouble, which left him in a very serious condition. Latest advices are that he has recovered somewhat but is still in considerable danger.

A Decreased Furnace Product.

STATIONARY STOCKS.

Furnace reports, which are fairly complete, show that during December there was a moderate decline in the rate of production of pig iron, which, however, threatens to be reversed during the current month, since a number of plants are getting ready to resume. Stocks have slightly increased, a tendency which may develop further during the month, in view of the closing down early in January of many works which melt the crude article.

On January 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

	Furnaces	Tons per week.
Anthracite	70	32,772
Coke.....	138	131,731
Charcoal.....	38	8,865
Total January 1.....	246	173,368
Total December 1.....	246	176,271
Decline.....	0	2,903

The weekly product of all the furnaces on January 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity Gross tons.
January 1, 1890.....	246	173,068
December 1, 1892.....	246	176,271
November 1.....	244	171,082
October 1.....	236	158,027
September 1.....	236	151,648
August 1.....	238	155,136
July 1.....	254	160,151
June 1.....	209	173,674
May 1.....	268	177,886
April 1.....	280	186,462
March 1.....	305	198,902
February 1.....	308	187,383
January 1, 1891.....	305	188,082
December 1, 1891.....	308	188,135
November 1.....	304	187,085
October 1.....	306	181,615
September 1.....	290	170,846
August 1.....	290	160,576
July 1.....	293	171,115
June 1.....	253	146,782
May 1.....	227	115,590
April 1.....	228	113,483
March 1.....	257	134,536
February 1.....	294	146,050
January 1, 1890.....	302	167,599
December 1, 1890.....	340	183,846
November 1.....	342	177,858
October 1.....	336	179,263
September 1.....	323	171,776
August 1.....	324	164,798
July 1.....	336	175,727
June 1.....	345	180,791
May 1.....	344	180,099
April 1.....	344	178,474
March 1.....	343	180,991
February 1.....	334	173,661
January 1.....	333	174,098

Our returns indicate that the output of the second half of 1892 was 4,300,000 tons, thus carrying the total of the year to 9,100,000 gross tons, or within 100,000 tons of the banner year of 1890.

The status of the anthracite furnaces was as follows:

Anthracite Furnaces, January 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	19	3	2,048	16	5,800
New Jersey.....	12	3	1,543	9	2,625
Spiegel.....	3	3	251	0	0
Pennsylvania:					
Lehigh Valley.....	46	26	10,317	20	7,415
Spiegel.....	1	0	0	1	56
Schuylkill Valley.....	90	12	6,058	18	7,335
U. S. Susquehanna Valley.....	16	8	2,688	8	1,305
L. S. Susquehanna Valley.....	17	7	4,708	10	2,439
Lebanon Valley.....	15	8	4,859	7	2,680
Totals.....	159	70	32,772	89	29,715

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
January 1, 1893.....	70	32,772
December 1, 1892.....	69	33,602
November 1.....	69	30,869
October 1.....	69	29,958
September 1.....	66	27,453
August 1.....	66	28,821
July 1.....	72	31,754
June 1.....	76	33,209
May 1.....	81	35,473
April 1.....	84	36,487
March 1.....	89	38,078
February 1.....	92	38,124
January 1.....	94	38,307
December 1, 1891.....	85	34,905
November 1.....	87	33,802
October 1.....	85	32,459
September 1.....	82	31,214
August 1.....	88	32,800
July 1.....	92	37,892
June 1.....	91	36,561
May 1.....	90	35,331
April 1.....	91	36,598
March 1.....	93	38,543
February 1.....	95	40,212
January 1.....	101	43,166

There were blown in during the month Norristown, one Henry Clay, and Crumwold, to be followed soon by No. 1 Paxton. Among those which have stopped are Anvil and one Sheridan.

The condition of the coke furnaces at the opening of the year was as follows:

Coke Furnaces, January 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	7	3	3,300	4	2,500
Pennsylvania:					
Pittsburgh district.....	24	21	35,135	3	4,923
Spiegel.....	12	2	1,501	0	0
Shenango Valley.....	18	7	7,534	11	7,930
Junata and Conemaugh Valley.....	17	7	6,829	10	3,120
Spiegel.....	1	1	200	0	0
Youghiogheny Val.....	3	0	0	3	2,215
Miscellaneous.....	4	1	630	3	1,078
Maryland.....	5	2	2,884	3	3,000
West Virginia.....	1	0	0	1	250
Wheeling District.....	9	7	7,471	2	2,780
Ohio:					
Mahoning Valley.....	15	9	10,812	6	3,940
Central & Northern.....	11	9	7,073	2	1,300
Hocking Valley.....	12	1	714	11	2,950
Hanging Rock.....	15	8	1,348	7	1,926
Indiana.....	2	1	280	1	200
Illinois.....	19	8	12,962	11	14,380
Wisconsin.....	4	4	3,517	0	0
Minnesota.....	1	0	0	1	700
Missouri.....	6	2	810	5	2,740
Colorado.....	3	2	1,737	1	700
The South:					
Virginia.....	20	12	6,502	8	4,180
Kentucky.....	6	3	1,445	3	1,800
Alabama.....	37	22	15,048	15	8,913
Tennessee.....	13	6	3,870	7	3,037
Georgia.....	2	0	0	2	1,045
North Carolina.....	2	1	100	1	500
Totals.....	259	138	131,731	121	76,197

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
January 1, 1893.....	138	131,731
December 1, 1892.....	136	133,160
November 1.....	133	130,673
October 1.....	128	118,806
September 1.....	128	114,538
August 1.....	131	117,984
July 1.....	140	127,433
June 1.....	145	128,852
May 1.....	147	132,313
April 1.....	152	138,116
March 1.....	163	143,490
February 1.....	167	138,268
January 1.....	163	138,611
December 1, 1891.....	162	142,747
November 1.....	162	142,152
October 1.....	163	135,997
September 1.....	161	127,664
August 1.....	154	125,736
July 1.....	150	122,422
June 1.....	124	100,165
May 1.....	98	70,529
April 1.....	90	67,570
March 1.....	113	85,093
February 1.....	125	94,473
January 1.....	143	112,153
December 1, 1890.....	168	127,634
November 1.....	168	122,555
October 1.....	170	127,247
September 1.....	150	119,757
August 1.....	150	113,040
July 1.....	163	120,673
June 1.....	167	123,340
May 1.....	160	122,489
April 1.....	173	131,560
March 1.....	169	122,595
February 1.....	169	118,568
January 1.....	160	119,396

There is nothing new to report from the Pittsburgh district, which produced in the second half of the past year the enormous total of 888,000 tons. In the Shenango Valley Raney & Berger started, and Claire is to start soon. In the Wheeling district Benwood went into operation late in December, while the Mahoning Valley records no changes. The same is true of the furnaces in Northern and Central Ohio. In Illinois one of the Union Furnaces of the Illinois Steel Company went out in December. Indiana has Vigo now running.

In the South Cranberry is at work, while Alabama records the blowing in of Gadsden and Florence. In Tennessee Embreeville stopped on the 25th ult.

The condition of the charcoal furnaces was as follows:

Charcoal Furnaces, January 1.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England.....	13	4	330	9	640
New York.....	5	1	113	4	470
Pennsylvania.....	13	4	210	9	725
Maryland.....	7	1	124	6	570
Virginia.....	13	1	100	12	727
Ohio.....	9	3	360	6	665
Kentucky.....	3	0	0	3	935
Tennessee.....	7	4	960	3	330
Georgia.....	3	1	245	2	330
Alabama.....	13	5	1,390	8	1,605
Michigan.....	20	9	3,178	11	2,810
Missouri.....	2	1	346	1	328
Wisconsin.....	4	2	1,034	2	465
Texas.....	4	1	240	3	610
Washington.....	1	0	0	1	170
Oregon.....	1	1	225	0	0
Totals.....	118	38	8,865	80	11,390

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
January 1, 1893.....	38	8,865
December 1, 1892.....	41	9,500
November 1.....	42	9,540
October 1.....	39	9,174
September 1.....	43	9,657
August 1.....	41	8,331
July 1.....	42	9,064
June 1.....	48	11,613
May 1.....	40	10,100
April 1.....	44	10,859
March 1.....	50	11,734
February 1.....	49	10,991
January 1.....	48	11,164
December 1, 1891.....	52	11,063
November 1.....	55	11,731
October 1.....	58	13,159
September 1.....	54	11,968
August 1.....	54	10,980
July 1.....	60	10,801
June 1.....	44	10,056
May 1.....	39	9,730
April 1.....	41	9,205
March 1.....	51	10,890
February 1.....	56	11,365
January 1.....	59	12,280
December 1, 1890.....	67	12,738
November 1.....	70	13,282
October 1.....	66	13,389
September 1.....	63	12,904
August 1.....	59	10,745
July 1.....	61	12,511
June 1.....	61	12,313
May 1.....	52	10,698
April 1.....	52	10,804
March 1.....	59	12,606
February 1.....	58	11,378
January 1.....	59	11,485

There were blown out or banked during the month of December, Catocin and Muirkirk, in Maryland; Pine Grove, in Ohio; Eureka, in Michigan and Sligo, in Missouri. Jefferson, in Texas, started on the 1st and Rock Run, in Alabama, blew in during December.

Stocks.

The figures reported to us relating to stocks on hand January 1, sold and unsold, are as follows, as compared with the

three previous months, the same furnaces reporting in each case:

Stocks:	Oct. 1.	Nov. 1.	Dec. 1.	Jan. 1.
	Tons.	Tons.	Tons.	Tons.
Anthracite pig	161,734	141,446	138,863	135,851
Coke pig	491,343	450,238	411,686	422,481
Charcoal pig	308,135	192,548	189,616	191,574
Totals	861,217	784,232	740,165	749,906

It will be observed that the declining tendency noted in November and December has not been sustained so far as coke and charcoal iron stocks are concerned. A slight decrease has taken place in anthracite iron stocks, but considered in the aggregate, the change during December was unimportant.

The Silver Situation.

The current price of silver certificates is about 83½ cents per ounce. Transactions on the New York Stock Exchange last week were 22,000 ounces against 387,000 ounces during the corresponding time in 1892.

Exports of silver bullion to Europe have been exceedingly heavy during the past two weeks, amounting to \$2,135,248, and for the year 1892 to \$23,295,916. This heavy movement just at this time, when there is so much bearish talk upon the silver situation, is suggestive of the condition which is not thoroughly understood and gives rise to an inquiry.

In a talk with an executive officer of the Kansas City Smelting & Refining Company, a representative of *The Iron Age* learns that the movement is due to the natural demands of the trade and that it will ultimately reach China and India. The fact that foreign nations are steadily buying our silver in such large quantities when it is so little thought of at home leads to the assumption that its opponents in this country are rather overdoing the matter in their anti-silver literature. In consumptive circles there has not appeared to be that same dreaded distrust which financial writers are almost universally picturing. Our informant states that his company was recently offered 81 cents per ounce for lots ranging from 100,000 to 200,000 ounces, 90 days' delivery. This would seem to indicate very little apprehension of lower quotations. Some very good judges believe that the situation has been discounted in the price of the metal, and, consequently, that the bottom has been reached. It is conceded that the repeal of the Sherman silver law would have the effect of temporarily depressing prices, but that the ultimate result would be strength where there is now uncertainty.

The curtailed operations of the mines in the West will not be felt for some time, owing to the fact that it requires 90 days for silver to reach the market after it leaves the ground. However, in time, if the present depression continues, it will work a remedy in this field by materially curtailing operations.

Chief Engineer Tomlinson was the guest of the regular fortnightly dinner at the Engineers' Club on Saturday evening, January 7. There were present about 50 members and guests representing the several engineering professions. Alexander Pollock presided, and opened the informal speech-making with a few happy remarks, short speeches being made by A. Fteley, I. F. Holloway, Commodore C. H. Loring, Charles E. Emery. Then Chief Engineer Tomlinson, of the "Umbria," in response to the call of his name, which was received with three hearty cheers, gave an interesting and graphic description of the accident and repair of the "Umbria's" shaft. He said that he felt proud that he had become famous in doing his duty as an engineer, and that it was the first time in his experience that the engineer had got the credit. He complimented his assist-

ants and praised the Cunard Line and its management. At the conclusion of his speech Mr. Tomlinson's health was drunk, and then a vote of thanks to him was passed. The club was then entertained by James S. Burdett, the humorist, and the New York University Glee Club. The dinner ended, all standing and singing "Auld Lang Syne." Among those present were: I. F. Holloway, Horace See, Alex. Pollock, A. Fteley, Com. Chas. H. Loring, A. Fletcher, Chas. E. Emery, G. W. McNulty, John Thomson, G. W. Bramwell, Prof. Henry S. Munroe, E. S. Renwick, William Gregory, Prof. I. E. Denton, Stephen W. Baldwin, W. H. Fletcher, A. G. Gorham, Captain Watson, H. S. Chase, A. L. Beebe, C. Warren Hunt, F. M. Leavitt, C. W. Nason, H. Montgomery, A. de Castro, E. H. Wells, G. C. Henning and O. F. Nicholls.

The Cast Iron Pipe Consolidation.

Wereported two weeks since that a movement was on foot to bring about a consolidation of the cast-iron pipe foundries in the country, the first step being to bring together the Western concerns and the second to consolidate the Eastern shops. We are advised that the latter movement has not progressed far and that a consolidation is improbable. A number of denials have been published concerning the Western fusion. The fact is that two weeks since the representatives of nine Western and Southern works met in this city, and the first steps toward a consolidation were taken, the works represented being the Lake Shore, St. Louis, Addyston, Dorman, Long & Co., Bessemer, Columbus, Chattanooga, Anniston, Bradford and South Pittsburgh. Prior to the meeting the different plants had been appraised and a statement had been secured showing the financial results obtained in recent years. On the basis of these reports the allotment of stock in the new concern was made. It is reported that additional amounts will be offered to the public. Nine directors were elected and there was some discussion relating to the presidency. Another meeting is to be held on the 18th instant. We understand that on the day following the meeting conferences were held with a number of the Eastern pipe founders at which prices on some large contracts then pending in this State were discussed.

New Publications.

THE A B C OF IRON. By Charles W. Sisson, Louisville, Ky. Price, \$2.

It was a very praiseworthy undertaking on the part of Charles W. Sisson of Louisville to place before the founders of the country a popular statement concerning the properties of pig iron. The publications of those who have been the leading investigators of the relations between the chemical composition of pig iron and its properties, so far as they affect the founder, are somewhat obtruse, and Mr. Sisson has attempted to popularize their work, and has succeeded admirably. His brief account of the methods of manufacture of pig iron is good. The short chapters on the constituents of pig iron and their effect upon the strength, fluidity, shrinkage, &c., of castings will be read with a great deal of interest and should be thoroughly studied by those whose principal business is to produce good castings at a minimum price.

Mr. Sisson takes strong ground in favor of grading pig iron by analysis rather than by fracture. His argument is sound, and will meet with the approval of all pro-

gressive men. We have no doubt that furnacemen will generally second his efforts in the heartiest manner and will welcome his aid, because it does missionary work where it is most needed—among the founders themselves.

It is only a little over a year since that a leading pig-iron producer in eastern Pennsylvania had his views based upon analysis vindicated in a very striking manner. One of his best customers, a neighbor, came to his works to order some No. 1 iron. The furnace manager urged him to take some metal which looked like rather poor No. 2, and after determined opposition overcame this customer's scruples. Not long after a further round lot of "the same stuff" was ordered, because, as predicted, it was carrying scrap in an exceptional manner, and yet was making excellent castings. The furnace manager furnished an explanation by the simple statement that the particular lot of poor-looking iron ran quite high in silicon.

Success in this direction, so greatly to be desired, can only be attained when founders begin to recognize the value of a chemical laboratory and co-operate with the furnacemen in comparing results. We know of cases in which mixtures have been cheapened dollars a ton of castings by chemical study. A first step in that direction is that founders familiarize themselves thoroughly with the first principles, and we know of no better means to accomplish that end than to give Mr. Sisson's neat work a careful perusal.

We are informed by the Cambria Iron Company of Johnstown, Pa., that there is no truth whatever in the report which has been going the rounds of the daily press to the effect that they have leased the Dunbar Furnace plant at Dunbar, Pa., and contemplate the erection of a rolling mill to be operated in connection with the furnace.

The Q & C Company of Chicago have acquired the device which has been known on the market for the past year as the Standard cattle guard. They will continue to manufacture the same device, and will also bring out a new cattle guard, which will be called the Q and C.

The Sheet Manufacturers.

(By Telegraph.)

On Tuesday, the 10th inst., the regular monthly meeting, which was also the annual meeting, of the Iron and Steel Sheet Manufacturers' Association, was held at their headquarters in the Times Building, Pittsburgh. The attendance was very large, 21 members being present. Officers were elected as follows: J. G. Battelle of the Piqua Rolling Company, Piqua, Ohio, was re-elected president; W. T. Graham of the Standard Iron Company, Bridgeport, Ohio, was elected vice-president, and John Jarrett was re-elected secretary and treasurer. During this week H. M. Garland, president of the Amalgamated Association of Iron and Steel Workers, and John Jarrett, representing the Iron and Steel Sheet Manufacturers' Association, will be in Washington to appear before the House Committee on Coinage, Weights and Measures to urge the adoption of a standard gauge for uniformly measuring the weight and thickness of steel, iron and sheet steel.

On Tuesday of this week two fly wheels burst in the rod mill of the Oliver & Roberts Wire Company, on the South Side, Pittsburgh, instantly killing two men and seriously injuring seven others.

MANUFACTURING.

Iron and Steel.

The works, with stock and machinery, of the Caldwell & Peterson Mfg. Company, at Wheeling, W. Va., were totally destroyed by fire on the morning of the 2d inst. The firm announces that they have made arrangements for duplicating their machinery and expect in a short time to be able to fill all orders promptly. Through the assistance of other manufacturers they are prepared to make prompt shipments of corrugated iron roofing and siding, V-crimped iron roofing and pressed standing seam iron roofing. The firm proposes to rebuild at once on a larger scale than ever before, and work on the erection of their new plant will be pushed as rapidly as possible.

Wilkie, Bothwell & Co., Limited, engineers and contractors, Times Building, Pittsburgh, Pa., have recently made plans and will supervise the construction of the blast furnace to be erected at West Superior, Wis., by the York Iron Company of Minneapolis, Minn. It will be remembered that the last named firm recently abandoned the blast furnace at Black River Falls, Wis., which they operated for several years. The new furnace will be equipped with three Whitwell stoves 16 x 60 feet in size, one draft stack 5 x 140 feet, the stack being 11 feet bosh and 60 feet in height, six boilers 46 inches in diameter and 34 feet long, with two 16-inch flues; one E. P. Allis & Co. blowing engine 30 x 48 x 72. The cast house will be 50 x 140 feet in size, built of brick, and the stoves will be protected by a brick inclosure 40 x 80 feet in size. The hoist tower will be a brick structure and equipped with an improved engine. Like the old stack at Black River Falls the new furnace at West Superior will be a charcoal plant.

Considerable damage was done in the new plant of the Troy, N. Y., Malleable Iron Works recently by the bursting of one of the large water pipes, which flooded the place.

The Baltimore Sheet-Iron and Tin-Plate Company commenced operations in building their works at Canton, near Baltimore, Md., on January 2. They expect to have four sets of tinning machinery at work before the end of this month, with a productive capacity of some 1800 to 1900 boxes per week. Their brands will be the Arto Siemens tin and Lilyterne. The concern is identified with the Cwmfelin Tin-Plate Company of Swansea, Wales.

The Oil City Tube Company of Oil City, Pa., recently made a shipment of tubing and castings on an order from the Imperial Government of Japan.

Douglass Furnace of the Douglass Furnace Company, at Sharpsville, Pa., which has been undergoing repairs for some time, resumed blast last week.

The Troy, N. Y., Malleable Iron Company have about completed the removal of their works from the old plants in that city and Albany, N. Y., to the new and extensive manufactory at West Troy. Operations in the new plant have been under way for several weeks, and the establishment is immense. About 500 men are employed by the company, and it is expected this large force will be increased to 700 when the works are running in full, which will be in a short time. Then there will be about 250 molders alone at work. The new plant is above the village of West Troy, the entire territory including 21 acres. Easy of access from the river and canals, and with a branch of the New York Central Railroad at its very gates, the new plant possesses the best of receiving and shipping facilities. The erection of the enormous buildings occupied nearly the whole summer. The cost of the works when completed will be several hundreds of thousands of dollars.

The plant already includes nine buildings and it is the plan to erect in all 12. One of the first buildings to go up when warm weather comes will be a fine office. This will be near the southern entrance to the grounds, which are encompassed by a picket fence. Of the nine brick buildings already erected the foundry is the largest, being 1155 feet in length and 75 feet in breadth. Next in size is the annealing room, with dimensions of 440 x 80 feet. Then comes the pattern room and carpenter shop, 130 feet long and 50 wide. This building is two stories high. The furnaces include two cupolas and five air furnaces. Three air furnaces will be in operation one day and two the next. The two cupolas will be in operation every day. Four heats will be run off, each heat averaging 8 tons. This will make the capacity for the three furnaces 96 tons daily. The blast system is used for the air furnaces.

The works have their own electric light and gas plant, and a complete system of water pipes and fire plugs will furnish means to extinguish a fire should occasion arise. The works are heated by the Sturtevant hot-air method, the apparatus providing for the utili-

zation of both live and exhaust steam. The works have also a complete system of sewerage. One of the proposed conveniences to be added next year is a trolley system that will convey the metal from one department to another. In the spring also will be added a wing, with dimensions of 375 x 75 feet, to the foundry. A soft-rolling room and a shipping room will also soon be erected.

In 1892 Sarah Furnace of the Kelly Nail & Iron Company, at Ironton, Ohio, was in blast about 11 months and made 27,300 tons of pig iron. Belfont Furnace of the Belfont Iron Works Company, at the same place, was in operation nine months and made 26,000 tons. Hecla Furnace of the Hecla Iron & Mining Company was in blast about five and one-half months and made 2850 tons of charcoal iron. Lawrence Furnace of the Lawrence Furnace Company, at Culbertson, Ohio, with offices in Ironton, ran quite steadily during the year and made 8200 tons. Pine Grove Furnace of Means, Kyle & Co., at Hanging Rock, also ran for the entire year, and made 5587 tons. Mt. Vernon of Campbell Iron Company, at Campbell, made 2500 tons, and Olive Furnace of McGugin & Co., made 2000 tons.

The plant of the Eagle Iron & Steel Company, at Ironton, Ohio, was put in operation on muck bars in April of last year, and on finished bars in May, but not until June was the production up to the capacity of the plant. During the year 1892 this concern made 8120 tons of bars and 600 tons of sheets. The sheet-mill department was put in operation about October 1 of last year. In 1892 the Belfont Iron Works Company of Ironton, Ohio, with 126 nail machines and 21 single puddling furnaces turned out 23,000 kegs of nails and about 3000 tons of muck bars. The Kelly Nail & Iron Company of Ironton, Ohio, with 14 single puddling furnaces and 119 nail machines, turned out last year 14,500 kegs of nails.

The D. R. Lean Company, engineers and contractors of Pittsburgh, have decided that in the future, in connection with the building and engineering of blast furnaces and steel plants, they will give particular attention to the designing of labor-saving machinery for handling of materials and increased output, and expect to make this a leading branch of their business.

The production of iron, steel and iron ores by the Colorado Fuel & Iron Company shows a gratifying business. The company have enough orders ahead for 1893 to warrant an early increase of their present capacity. During the months of January, February and March the pig-iron furnaces were banked, yet the total output for the balance of the year was 69,957,199 pounds. Iron castings amount to 3,705,029 pounds. The cast-iron pipe furnaces, although banked during April and May, turned out 4,628,307 pounds. The production of steel rails was 54,621,172 pounds, and 2,880,725 pounds of scrap bar and 281,600 pounds of spikes. There were also 10,875,553 pounds of merchant iron and 5,098,543 pounds of unfinished iron. Steel blooms amounted to 61,491,243 pounds and steel ingots 70,473,947 pounds. Muck bar amounts to 2,467,414 pounds and spiegel 2,277,500 pounds. Ores from the Orient and Calumet run up respectively to 71,265,100 pounds and 31,221,300 pounds.

The labor troubles at the works of the Diamond Slate Iron Company, Wilmington, Del., have been settled, the puddlers deciding at a recent meeting to accept the reduction from \$3.75 to \$3.25 a ton. Work will be resumed as soon as the necessary repairs are made to the furnaces and machinery.

The Lackawanna Iron & Steel Company's north mill, at Scranton, Pa., which shut down December 9 for the purpose of making repairs and allowing orders to accumulate, has resumed operations.

It is reported that No. 2 Sheridan Furnace, at Sheridan, Pa., was chilled on the 24th ult.

The new Buffalo Furnace of the Union Iron Company, at Buffalo, N. Y., will be blown in during the present month.

Clara Furnace of the Vanderbilt Steel & Iron Company, Birmingham, Ala., is being remodeled and enlarged.

One of the three furnaces of the Colorado Fuel & Iron Company, at South Pueblo, Col., is being relined.

The North Alabama Furnace property, at Florence, Ala., has been sold at auction to the Spathic Iron Company of Nashville, Tenn., for \$69,500. It is stated that the furnace will be put in blast as soon as necessary repairs are made.

The Clymer Iron Company of Temple, Pa., have presented a petition in court at Reading asking for the dissolution of the corporation. The company were organized May 6, 1873, and, it is stated, have no debts or liabilities.

On December 28 the Navy Department at Washington gave out contracts for a large amount of steel castings. The Penn Steel Cast-

ing & Machine Company of Chester, Pa., secured a large part of this, the weight involved being 244,890 pounds, and the character of the work, gun mounts and fixtures for naval vessels. The bids per pound were as follows: Norristown Steel Company, 12 1/4 cents; Standard Steel Casting Company, Chester, 9 1/2 cents; Solid Steel Company, Alliance, Ohio, 9 1/4 cents; Benjamin, Atha & Illingworth Company, Newark, N. J., 9 cents; Midvale Steel Company, Philadelphia, 8 7/10 cents; Penn Steel Casting & Machine Company, 8 1/2 cents. The total amount of the bid is \$20,815.65.

An execution for \$50,000 against the Coplay Iron Company of Coplay, Pa., has been entered by J. D. Brodhead of Bethlehem, and R. E. Wright of Allentown, Pa., acting for the estate of Asa Packer, deceased, to the use of the E. P. Wilbur Trust Company of Bethlehem. The sheriff has levied on the furnaces and other property and will sell the same. The company were organized in 1853 by Stephen Baillet & Co. In the next year they were incorporated as the Lehigh Valley Iron Company. Three furnaces were built respectively in 1854, 1862 and 1868. They have been idle for some time.

Centre Furnace at Ironton, Ohio, will be operated during the current year by Lindsey Kelly, Mr. Franklin having withdrawn from the firm of Kelly & Franklin, who have heretofore operated the furnace under lease.

Mount Vernon Furnace of the Campbell Iron Company, in Lawrence County, Ohio, has stopped for repairs.

Cranberry Furnace at Cranberry, N. C., blew in December 12.

The furnace at Embreeville, Tenn., went out of blast December 25 for the purpose of making repairs.

The work of completing the West Superior Furnace at West Superior, Wis., the erection of which was begun in 1889, may be taken up during the coming summer.

Of the 16 charcoal furnaces in Virginia only one is now or has been for some time in operation. There is no probability of any of them resuming operations during 1893.

The large furnace at Graham, Va., is out of blast for repairs, but will probably resume operations in the next 60 days.

The Southern Steel Works, Leighton & Sons, proprietors, Chattanooga, Tenn., have recently greatly improved their plant.

The Helena Rolling Mill property, Calera, Ala., was sold at Chancery sale recently. The Alabama National Bank of Birmingham and the Capital City Insurance Company of Montgomery were the purchasers. It is stated that the plant was bid in for the bondholders, who are mostly Boston capitalists, and that a company will be formed to operate it.

Next week the Jefferson Steel Works at Birmingham, Ala., will commence making four runs each day. They have been making only two runs a day, the output being about 25 to 30 tons per day. The plant was only operated half time until everything was in order. Eugene Ensley states that everything is now working satisfactorily.

The Southern Iron Company are erecting two 50-ton blast furnaces at Mamie, Wayne County, Tenn., and a new ore washer for brown hematite ore. One furnace is about completed and will blow in early in the spring.

The furnace being erected at Covington, Va., by Frank Lyman of New York will soon be ready to go into blast.

The American Wire Nail Company of Anderson, Ind., one of the largest wire nail factories in the country, are adding an outfit of Ridgway cranes for the rapid handling of their raw materials.

The Norristown Furnace, at Norristown, Pa., has been blown in by the Norristown Furnace Company. It is practically a new furnace, having been thoroughly overhauled during its five months' idleness.

The capacity of the Shenango Valley Steel Works, at New Castle, Pa., is to be increased by the addition of new engines, boilers, pumps and other machinery.

The Scottsdale Iron & Steel Company of Scottsdale, Pa., have shut down its mills to remain idle for three weeks. Numerous repairs and improvements are to be made.

We are advised that the report that Park Brother & Co., Limited, of the Black Diamond Steel Works of Pittsburgh, contemplated the removal of that plant to Latrobe, Pa., is without foundation. This firm have no intention of removing their works from their present location in Pittsburgh for some time at least.

The six members of the Advisory Board formed at the commencement of the strike at the Beaver Falls Mills of the Carnegie Steel Company, Limited, at Beaver Falls, Pa., have not been given their old positions in the works,

and it is said that these men will never again be employed by that firm. The Beaver Falls Mills are now in full operation, the wire, rod and nail mills being operated double turn. Some remarkable records have been recently made in the rod mill and the output is now larger than ever before in the history of that plant.

Macungie Furnace, at Macungie, Pa., operated by the Crane Iron Company of Cata-sauqua, Pa., has been put in operation after an idleness of some months.

The Standard Underground Cable Company of Pittsburgh have declared a regular quarterly dividend of $1\frac{1}{2}$ per cent, payable on and after the 10th inst.

The Sharon Iron Company, Limited, will immediately commence the erection of two new sheet mills at their plant at Sharon, Pa. This addition will necessitate the building of an iron structure 110 x 145 feet in size. Contracts have already been let. E. P. Allis Company of Milwaukee, Wis., will build the engine, the Lloyd Booth Company of Youngstown, Ohio, will furnish the trains of rolls and the Penn Bridge Company of Beaver Falls, Pa., will erect the building.

The Wheeler Furnace Company, operating Ella and Fannie furnaces at West Middlesex, Pa., and Alice Furnace at Sharpsville, Pa., have sold their entire output of pig iron for some time to come. The two furnaces at West Middlesex are now in operation, and Alice at Sharpsville, which has been idle for some time undergoing repairs will resume blast during this week.

Girard Iron Company, operating Mattie Furnace at Girard, Ohio, have let a contract to the Westinghouse Electric & Mfg. Company of Pittsburgh for the erection of an electric light plant to be built at this furnace.

During the month of December Nos. 1 and 2 open-hearth furnaces at No. 1 plant of the Pennsylvania Steel Company, at Steelton, Pa., turned out 3240 tons of steel, which is the largest production ever made in any one month at these works by the above furnaces. We are advised that the output in the entire open-hearth departments of these works for the month of December was much heavier than any one previous month in the history of the plant.

The Central Iron & Steel Works at Harrisburg, Pa., have begun the erection of three open-hearth furnaces. The foundations for an additional like number will be made at the same time.

Machinery.

J. E. Lewis of the Automatic Machine Company, Alliance, Ohio, has recently designed a safety appliance for use in mine shafts or wherever cages or elevators are used for ascent and descent. We are advised that these safety appliances have been tested before a number of representative coal operators with satisfactory results.

The various Westinghouse interests at Pittsburgh are paying out nearly \$700,000 in dividends this month for the quarter ending on December 31. Included in these interests are the Westinghouse Air Brake Company, Philadelphia Natural Gas Company, Standard Underground Cable Company and Westinghouse Electric & Mfg. Company. The Westinghouse Air Brake Company pays the largest part of this amount, having declared a dividend amounting to about \$500,000. The Philadelphia Natural Gas Company comes next with dividends amounting to \$97,500.

The Empire Machine Company, with a capital stock of \$12,000, have been organized at Hamilton, Ohio, for the purpose of engaging in the manufacture of engines, boilers, &c. The incorporators are J. H. Webster, James W. Webster and Alexander Hunter.

The Ravenna Boiler Works of Ravenna, Ohio, announce that they have excellent facilities for handling promptly boiler and tank work, and also all kinds of work in which plates and sheets are required.

The Pittsburgh Barrow & Forge Company of Pittsburgh have been incorporated with a capital stock of \$10,000.

A company has been organized at New Castle, Pa., with a capital stock of \$10,000 for the manufacture of steel novelties. The officials of the new concern are J. C. Reed, president, and C. W. Watson, secretary and treasurer.

The equipment of the Middleport Steel Works at Middleport, Ohio, owned and operated by King, Gilbert & Warner Company of Columbus, Ohio, consists of two 2-ton converters, one soaking pit and one 33-inch blooming mill built by Mackintosh, Hemphill & Co., Limited, Pittsburgh, Pa. The average output of this plant is from 325 to 380 tons every 24 hours, but on December 22 last 204 tons of 4 x 4 Bessemer billets were rolled in 12 hours, and

during the rest of that week this output was maintained. It is claimed that this is the largest output ever made in this country by any plant of similar size.

The Harlan & Hollingsworth Company of Wilmington, Del., are making extensive improvements to their machine shop by enlarging the buildings and adding new machinery.

The new frog and switch shops established at Carlisle, Pa., by the Carlisle Mfg. Company, have been formally opened. The main building is 304 x 100 feet.

The Lowville Iron Works Company of Lowville, N. Y., will locate their works at Niagara Falls with a view to securing improved freight and power facilities. The company manufactures pulp mill machinery, but intend to extend their lines to general machinery.

A. G. Thurston's machine shop at Fall River, Mass., has been burned, together with its contents, including many valuable patterns which cannot be duplicated. The loss is \$30,000.

Harvey & Co.'s machine and granite tool shops at Augusta, Maine, have been burned.

The Ranton Boiler Company of Syracuse are considering the removal of the works to Utica, N. Y.

The foundry of the Robinson-Rea Mfg. Company, Pittsburgh, Pa., has been burned. The fire started in the cupola and in a short time the structure, which was 180 x 150 feet in size, was in flames. The loss is placed at \$40,000.

Fire has destroyed the machine shops of the Lake Shore Railroad Company at Kaukauna, Wis. The loss is about \$30,000.

The entire force of boiler makers employed in the Brooks Locomotive Works at Dunkirk, N. Y., some 300 in number, have struck for higher wages. This is the first strike in the works for years, and unless settled is likely to lead to trouble in all departments where nearly 1500 men are employed.

The Universal Radial Drill Company of Cincinnati, Ohio, have assigned. The assets are given as from \$30,000 to \$40,000 and the liabilities at the same figures. The business was established ten years ago and has always been successful. The failure was therefore wholly unexpected. Failure to collect large outstanding accounts is said to be the cause of the assignment. The company will probably resume.

The Humphrey Turbine Works of Akron, Ohio, will be removed to Cuyahoga Falls, Ohio, where a machine shop has already been provided for them. A large foundry will be built and a number of improvements made in the equipment of the plant.

The new pipe plant which Curtis & Co. have begun to erect at Cohoes, N. Y., to take the place of the one recently burned, will be a modern establishment in every respect and a great improvement over the old shop. The works will be lighted by electricity generated on the premises.

All the departments of the Johnson Company's Switch Works, at Johnstown, Pa., went on single turn on the 1st inst. The night turn will probably be suspended for about a month.

The works of the Chattanooga Tool Company, Chattanooga, Tenn., have been sold at chancery sale to W. N. Gordon of New Orleans for \$10,000, one-half of the debt for which the plant was sold.

The Baldwin Locomotive Works of Philadelphia announce that Robert Spencer and Carter H. Fitz-Hugh have been appointed representatives for the Northwest with offices in the Monadnock Building, Chicago.

J. F. Elderlin, Aberdeen, Miss., will enlarge his foundry and put in new machinery.

The machine shop of E. H. Kahl, at Shelbyville, Tenn., which was recently destroyed by fire, will be rebuilt on a larger scale.

The Buffalo Cast-Iron Pipe Company of Buffalo, N. Y., have decided to use the Ridgway quick-acting, steam-hydraulic cranes throughout their entire works, and have just placed an order for them with the makers. The specifications for these cranes are exacting: They must swing with the greatest ease when loaded to their full capacity; the trolley must move with little friction and be able to go from end to end of jib in a second; the lead must be lifted full height of 12 feet in an instant and must do so without shock or jar; they must be absolutely noiseless; the greenest men about the place must be able to handle them, and, no matter how careless, must not be able to hurt themselves, the machine or the work; the cranes must not get out of order in any location or for any duty.

The Holly Mfg. Company of Lockport, N. Y., are putting in a number of new planing machines, lathes, drills and milling machines. A quantity of the old machinery is being removed and replaced by new and improved apparatus.

N. P. Bowsler, South Bend, Ind., reports a growing trade in his balancing ways and writes us that he is receiving many flattering letters from well-known firms using these tools. He recently shipped a small size balancing way by express to F. B. Fargo & Co., Lake Mills, Wis., who use it in the making of high-speed dairy machinery. The Brown & Sharpe Mfg. Company of Providence, after examining into its merits, have added it to their machine shop equipment. The Edw. P. Allis Company of Milwaukee are using two of Bowsler's balancing ways in different departments.

Among recently authorized corporations in Illinois is the following: Russell Bros. & Young at Chicago; capital stock, \$12,500; for a general foundry business; incorporators, Elbridge E. Russell, Elbert E. Russell and R. W. Young.

At a recent meeting of the stockholders of the Elwood Iron Works, Elwood, Ind., the capital stock was increased from \$10,000 to \$100,000. The plans and specifications for the new radiator works have been completed and the contracts will be let at once.

The firm of James McNeil & Co., boiler manufacturers at Pittsburgh, has been succeeded by Thos. McNeil, who will conduct the business at the old location.

Miscellaneous.

Gen. Samuel Thomas of New York, Senator Calvin S. Brice, and John M. Bass of Fort Wayne, Ind., have organized a company to build car works and a car-wheel foundry at Lenoir City, 30 miles from Knoxville. The car works, it is reported, will have a capacity of 15 cars a day.

H. N. Hovey and J. B. McCracken of Muskegon, Mich., have purchased what is known as the Muskegon Car Company plant, which has a capacity of ten cars a day. It includes about 26 acres of land, besides buildings and machinery. The shops are well equipped, but they have been idle for nearly two years, since the failure of the Muskegon Car Company.

The Scranton Traction Company of Scranton, Pa., have placed the contract for the buildings of their new plant with the Berlin Iron Bridge Company of East Berlin, Conn. The boiler and engine room will be 65 feet wide by 200 feet long, with a machine shop and car shed 93 feet wide by 235 feet long.

The Bath Iron Works of Bath, Me., have been awarded the contract for building a new passenger steamer for the Norwich and New York Line. Her hull will measure 320 feet on the keel, 336 feet on deck, 49 feet 10 inches beam and 20 feet 7 inches depth. The cost will be about \$425,000.

Efforts are being made to reorganize the Knoxville Car Wheel Company and adjust matters so the plant can resume operations. This concern made an assignment about one year ago. C. H. Brown is the president.

Work at the zinc mines at Mossy Creek, Tenn., has been suspended until the zinc furnaces now in course of construction at Clinton, Tenn., are completed, when the ores will be treated at that point and the industry will be extended.

The Southern Malleable Iron Company, Chattanooga, Tenn., are running full on heavy orders for car couplers, and they will increase the number of their employees.

The Pittsburgh Reduction Co., Pittsburgh, Pa., manufacturers of pure aluminum, with works at New Kensington, Pa., have recently made some extensive additions to their plant which will materially increase their capacity for the production of aluminum. For some time past they have found it very difficult to keep up with orders, and as the demand for aluminum is constantly increasing, it became absolutely necessary to increase their facilities for production.

Hovey and McCracken, Muskegon, Mich., lumbermen, have purchased and will operate as a freight-car plant the defunct Muskegon Car Company. It will have a capacity of ten cars a day.

The Gleason Tool Company's plant in the Kidd Building, Rochester, N. Y., was damaged by fire and water December 24. The damage was slight.

The annual meeting of the stockholders of the Standard Plate Glass Company will be held at Butler, Pa., on January 17, at 11 a.m.

The Bridgewater Natural Gas Company of Beaver Falls, Pa., have just struck a large gas well in the Leetsdale territory, which gauges from 400 to 500 pounds rock pressure.

The arrangements for the reorganization of the Northern Car Company of Minneapolis, Minn., are about completed.

The Chattanooga Pipe Works are running full time now and report a satisfactory demand for their goods.

TRADE REPORT.

The Cleveland Ore market is dull, and it may be regarded as doubtful whether the furnace interests will come forward early this year since they feel generally convinced that they control the situation. It has been a matter of current gossip that a large share of the product of the leading mine of the Gogebic range has been taken by a large Western Steel works. Beyond that there has been no movement to cover supplies. Unless the railroads come forward earlier than expected with their requirements an early Ore buying movement is not probable.

Our usual monthly furnace report shows that statistically the position changed but little during December. With the exception of Chicago, which sent a somewhat cheerful message, the leading primary Pig Iron markets reflect a very quiet condition of affairs. The conviction has gained general acceptance among buyers that they will succeed in forcing down prices, so that a period of dullness seems imminent until sellers abandon their resistance, or buyers change their views. Detroit reports a somewhat livelier local movement in Charcoal Pig Iron.

Bessemer Pig has further weakened in Pittsburgh and \$13.50 is now openly quoted, with a transaction on record of 10,000 tons at a shade under that figure.

Billets have squarely declined in the Pittsburgh and Wheeling markets to \$21.50, at which some sales for delivery in this and next month have been made.

There has been some buying of Wire Rods at Pittsburgh, about 4000 tons being placed at a shade under \$30, at mill. An accident has occurred at the Oliver mill.

To cover sales of Pipe there have been some round sales of Muck Bars at Pittsburgh at \$24 @ \$24.25, the market reflecting the weakening tendency in Gray Forge and in Steel Billets.

Matters have been quiet in the Steel Rail trade during the current week, little business having been placed East or West. In fact, in the latter territory the Colorado Mill appears to have gathered additional work. Aside from the 10,000 tons for the Chicago, Burlington & Quincy Road, reported some time since, the concern has secured 25,000 tons, which includes 15,000 tons for the Union Pacific. Evidence is cropping up in different quarters that the requirements this year will be heavier than they were during the last two. Very little improvement is looked forward to from any new lines, but the renewal demand promises to be a good deal better than it was. To some extent the mills will get the benefit of betterments accumulated during the last years of railroad poverty.

Structural Iron is dull in nearly every quarter, only one large order for 2500 tons having been placed in St. Louis. Still it is quite evident that a very large amount of work is bound to come out. It is really only the present dullness which is causing uneasiness. Some good Ship Plate orders have been given out in New England, and a contract for about 8000 tons for a water pipe line in Rochester is soon to be closed unless the Cast-iron Pipemakers go closer than they have done. Efforts to come to some agreement among the latter on this particular work have not been successful.

Bar Iron has weakened in the leading markets, prices having come down to 1.45¢ at valley mills and 1.52½¢ at Eastern Pennsylvania works.

There are few features of interest in the Metal market. Copper continues steady at 12.20¢ @ 12.25¢. Tin has weakened to 19.62½¢, with indications that the load being carried by speculators is telling.

Chicago.

(By Telegraph.)

Office of The Iron Age, 50 Dearborn street, CHICAGO, January 11, 1893

Pig Iron.—It is a matter of gratification to be able to report an increased volume of business as compared with last week. The movement is confined, however, almost exclusively to local Coke and has not been general. Most of the houses report business of a moderate character, consisting of small lots wanted for immediate shipment. A few have made sales of considerable quantities for deliveries covering the first four months of the year. Among these sales may be noted one of 500 tons of Bessemer, at a shade under our quotations. The other lots of this size or larger were of Foundry Iron and were made at full figures. Negotiations are now in progress for further considerable quantities, and hopes are entertained that the buying movement predicted for January is now beginning. Many buyers who are now making inquiry seem to be in no hurry to contract for their requirements to any extent, but they are keeping closely in touch with the market and are evidently prepared to take immediate advantage of any change in its temper. The Southern Iron houses report continued heavy shipments, and the steady reduction in stocks at the furnaces causes little fear of concessions, which might be made if Iron was accumulating. Our quotations appear to fairly represent the market and are therefore unchanged. Lake Superior Charcoal has participated to but a limited extent in the movement of Pig Iron during the past week, but manufacturers maintain firm prices. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal.....	\$16.50 @	\$17.00
Local Coke Foundry, No. 1.....	13.75 @	14.25
Local Coke Foundry, No. 2.....	13.50 @	14.00
Local Coke Foundry, No. 3.....	13.25 @	13.75
Local Scotch.....	14.50 @	15.00
Ohio Strong Softeners.....	16.25 @	17.00
Southern Coke, No. 1.....	14.75 @	15.25
Southern Coke, No. 2.....	13.00 @	14.00
Southern Coke, No. 3.....	13.10 @	13.25
Southern, No. 1, Soft.....	13.25 @	13.60
Southern, No. 2, Soft.....	13.00 @	13.25
Southern Gray Forge.....	12.85 @	13.10
Southern Mottled.....	12.50 @	12.75
Tennessee Charcoal, No. 1.....	16.50 @	17.50
Alabama Car Wheel.....	19.50 @	20.50
Coke Bessemer.....	14.50 @	15.00
Hocking Valley, No. 1.....	17.00 @	17.50
Jackson County Silvery.....	17.00 @	17.50

Bars.—Some of the agricultural implement makers are purchasing considerable Iron to fill in on their season contracts, which seem to be below their requirements. Wagon makers are also buying to some extent. The car builders, however, are as yet the only class of consumers who want Bar Iron in round quantities. Prices appear to be a little weaker in consequence of the effort made by some manufacturers to press sales. The valley mills are now quite generally quoting on a basis of 1.45¢ at mill, or 1.60¢, half extras, Chicago, for Bar orders, with concessions on good specifications. These prices represent also competitive rates from the near-by mills. Soft Steel Bars, mill shipment, are running at about 1.65¢ @ 1.70¢, Chicago. Jobbers report orders coming in a little more freely, and a little larger than they were in December. Prices are a trifle lower from store and are now quoted at 1.75¢ @ 1.80¢ on Bar Iron, and 1.80¢ @ 1.90¢ on Bar Steel. The Calumet Iron & Steel Company started up their rolling mill this week after stoppage since October, 1891.

Structural Material.—The Planters' Hotel, St. Louis, which will take some 2500 tons of Beams and Columns, is the only large contract placed in the West during the past week. The builders who secured the contract are stated to be closely allied with the Indiana Steel Company, so that it is very likely that the

Beams will go to that mill. General business is quite light, and manufacturers say that it is extremely difficult to quote prices under the circumstances. Beams in mill lots range from 2.17½¢ to 2.25¢, Chicago, but these rates are only nominal, and it is difficult to say what would be done on a good-sized contract if it were now to come into the market. Angles and Universal Plates are selling at 1.90¢ @ 2¢, Chicago, from mill. Sheared Plates are a little lower in price, and can now be had at 1.90¢, Chicago, or perhaps a shade under that.

Plates.—The trade is quiet with both manufacturers' agents and dealers. No large contracts are under negotiation so far as can be learned. Tank Steel is quoted from mill at 1.90¢ @ 2¢, and a claim is made that a small lot was recently purchased for Milwaukee delivery at less than 1.95¢, delivered. Higher grades are a little lower, in sympathy with Tank Steel and also in consequence of the slack demand at this season. Store prices are as follows: No. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.25¢ @ 2.40¢; Shell, 2.40¢ @ 2.60¢; Flange Steel, 2.70¢ @ 2.90¢. Tubes are quoted at 60 ¢ off, but the combination prices are not recognized on large orders.

Sheets.—Black Sheets are in only moderate demand, but negotiations are proceeding for a few large lots for season delivery. No. 27 Common Sheet Iron is now quoted at 2.90¢ @ 2.95¢ from mill for Chicago delivery, and Steel Sheets 3¢. Galvanized Iron is in a little better demand than Black, but the mills have evidently caught up with their orders, as stocks in local warehouses are getting in much better shape than any time since last summer. The demand is confined at present to small lots for quick shipment. Mill prices are still on the basis of 70 and 7½ ¢ discount for Juniata, but this is shaded to large buyers. Small lots from stock are still selling at 70 ¢ off. Copper Sheets are in steady demand at 30 ¢ off for small lots from stock.

Merchant Steel.—The demand for the cheaper Steels is better than was expected for this month. Quite a number of inquiries for considerable quantities have come up during the past week and several good-sized sales have been made to manufacturing consumers. Prices on mill shipments are quite firm at 2¢ @ 2.20¢, Chicago, for best grades of Open-Hearth Spring and Machinery. Ordinary Tool Steel is in fair demand at 6¢ @ 7¢, according to quantity.

Rails and Track Supplies.—Orders booked and in sight are about the same as at this time last year, and manufacturers are looking forward to at least as good a year as 1892. There is some expectation that railroad building will be also larger this year than last, as quite a number of schemes of extensions and new lines are taking such shape that manufacturers are inclined to attach some little faith to them. Prices range from \$30 to \$32 for standard sections, according to quantity, terms of payment and place of delivery. Iron and Steel Splice Bars are quoted at 1.65¢ @ 1.75¢; Track Bolts, with Hexagon Nuts, 2.60¢ @ 2.70¢; Spikes, 2.05¢ @ 2.10¢.

Old Rails and Wheels.—The Old Iron Rail market has been very quiet for some time, and not a single transaction has come to light during the past week. Dealers quote prices nominally \$18 @ \$18.25. Old Steel Rails are worth \$12.50 @ \$15, according to length. A little more inquiry is noted for Car Wheels and prices to consumers are about \$14.75 @ \$15.

Scrap.—This class of material is in very little demand and consumers report that they are able to purchase No. 1 Railroad Forge at \$15 @ \$15.25 and No. 1 Mill at

\$10.50. Dealers ask somewhat higher prices than this, but say frankly that they are doing very little business.

Metals.—Lake Copper is quoted at 12½¢ and casting brands at 11½¢ in car-load lots, with quite a good demand. Spelter is selling at 4.15¢ @ 4.20¢ in car-load lots, according to brand. Pig Lead is dull with nominal quotations at 3.60¢ @ 3.70¢, with sales confined to single car-loads.

C. A. Ridgely has been appointed Chicago agent for the Springfield Iron Company, to succeed James Johnston, who has severed the connection existing between himself and the company for a number of years. The office will be continued in the Phenix Building, corner Jackson and Clark streets. Mr. Ridgely has for some time filled a responsible position at the works at Springfield, Ill., and is therefore thoroughly familiar with the business of the company and the requirements of their patrons.

The Holly Springs Steel & Iron Company, Geo. H. Sibell, manager, have opened an office at 63 and 64 Michigan avenue, Chicago, for the sale of specialties in Boiler Iron and Steel, Pig Iron, Machinery Steel, Bar Iron, Nails and Spikes, Bolts and Rivets, &c.

Philadelphia.

Office of The Iron Age, 230 South Fourth St., PHILADELPHIA, Pa., January 10, 1893.

Business has not fairly started since the holiday suspension, but things are beginning to shape in that direction. There is quite a good deal of inquiry, and much of it that looks like immediate business, not in large lots, but along the entire line. Consumers are evidently desirous of getting material to go on with; and to that end are bidding closer to sellers' prices than for some time past. The general average of prices is a trifle lower, however, and might be still lower if the bids were for large lots, but as buyers are only taking just enough to tide them over the next three or four weeks, sellers consider it hardly worth their while to make heavy cuts. Taking all the facts into consideration, it is not unlikely that prices are pretty well down to rock bottom, and, as most of the orders that have been placed could no longer be postponed, it is not unreasonable to suppose that the movement will continue, and for the time being it enables sellers to maintain prices—that is to say, maintain them at the revised list of figures given under the various headings herewith.

Pig Iron.—Without any very decided activity there is a better movement, but chiefly in small lots. Stocks in consumers' yards were reduced to such small proportions that renewals have been imperative; so that along the entire line there has been more or less activity. Some bids were for large lots, but not on terms that makers could accept, so that the practical result has been small orders at figures showing a compromise on both sides, the ultimate outcome in regard to prices being still undecided. Some good concerns say that it is quite impossible for them, or any one else, to meet the demand at prices now obtainable for large lots, and that for the present they are simply lookers-on; if they can get their price well and good, if not, they are not in the business. These remarks are based on bid prices, not on actual selling prices, the difference being from 25¢ to 50¢ per ton. That is to say, sellers are willing to accept \$12.75 @ \$13 for large lots and good deliveries of Gray Forge, and from 10¢ to 20¢ below \$14 to a few cents above \$14 for No. 2 X, according to quantity, brand, delivery, &c., but they

are not prepared to accept \$12.50 @ \$13.50, which is about what buyers offer for large lots, Philadelphia delivery or its equivalent. It is some satisfaction, however, to find that there is a market at a price—pretty good evidence that business is starting up, and that in course of two or three weeks prices will probably become fairly settled. General quotations are about as follows for Philadelphia or equivalent deliveries and from 25¢ to 40¢ less for some Southern Irons at points such as Harrisburg, York or Baltimore:

American Scotch, No. 1x.....	\$17.00	@	\$17.25
American Scotch, No. 2x.....	16.00	@	16.25
Standard Penna. (Lake Ore), No. 1x.....	14.75	@	15.25
Standard Penna. (Lake Ore), No. 2x.....	14.25	@	14.60
Standard Virginia, No. 1x.....	14.75	@	15.00
Standard Virginia, No. 2x.....	14.00	@	14.35
Virginia and Southern, No. 1x.....	14.25	@	14.60
Virginia and Southern, No. 2x.....	13.25	@	13.60
Standard Penna. and Virginia Forge.....	13.10	@	13.25
Ordinary Forge.....	12.60	@	12.75

Bessemer and Low Phosphorus Pig.—Nothing doing of any account. Prices are nominally \$15.50 @ \$15.75 and \$17.50 @ \$17.75 at furnace, but only small lots are taken.

Muck Bars.—Extremely dull. Sellers ask \$23.75 @ \$24, delivered, but no transactions have been heard of since the holidays.

Steel Billets.—Inquiries from consumers denote that they are beginning to take some interest in the market. Small lots prompt delivery have been sold at \$24.25 @ \$24.50, but for large lots sellers have quoted \$24, Schuylkill Valley. These are believed to be bottom figures, and less than some mills are willing to accept, but it is not improbable that business in large lots will begin at about \$24 for January, February and March deliveries.

Bars.—The demand is a little better, but as it is chiefly for small lots, mills are not getting much work ahead. Prices are terribly weak, and although 1.85¢ @ 1.70¢ is supposed to be low enough to quote for best quality Bars, city delivery, it is nevertheless true that lower figures are named when the order is of sufficient importance to make it worth while looking after. There is so much work going West, particularly car building, that mills in this vicinity find it extremely difficult to keep things moving, and for deliveries at mills in the interior prices are very much below anything that we should feel justified in quoting.

Skelp.—Prices are supposed to be about 1.60¢, delivered, but there is not much demand, and for the right kind of an order it is possible that even this low figure might be shaded a little.

Plates.—The situation is somewhat mixed, not without some good features and not without others of an opposite character. There is a good deal of *bona fide* business around, some with the usual string attachment—it may come out all right, or it may be postponed. A good deal of disappointment is felt in regard to the delay in closing for the material for the International Line steamers. Bids were put in for 10,000 to 15,000 tons, and dates have been fixed for awarding the business, but the time has come and gone and matters are still in abeyance, and nobody seems to have any definite idea when it will be settled, although it is affirmed that the ships are to be built as rapidly as possible. There is a great deal of other work, however, in which there is some urgency, including orders for the New England shipyards as well as for some of those on Lake Erie and Lake Michigan. There is also the 8000-ton order for Water Pipe, which is said to be delayed until they can determine between Riveted Pipe and the ordinary Cast-Iron Pipe. The injunction

against the elevated railway in this city is offset by the setting aside of the one against the trolley system, which is to be pushed through at once, and is expected to consume a very considerable amount of material of one kind or another. There is work enough ahead. The difficulty is to get at it, and in the meanwhile prices have been gradually pared down clean out of sight. But even this is beginning to work its own cure, quality in some cases having been reduced to correspond with the reduced prices. The result has been very serious losses to consumers, who begin to find that a low price does not necessarily mean cheap material. Several instances have come up recently in which boilers have had to be taken out and rebuilt with better material. A general readjustment is being made, and as consumers begin to be more exacting in regard to quality, makers will also be compelled to look after their end—viz., prices, which for the present are supposed to be about as follows:

	Iron.	Steel.
Tank Plates.....	1.80 @ 1.90¢	1.85 @ 1.90¢
Shell.....	2.10	@ 2.20¢
Flange.....	2.70 @ 2.90¢	2.40 @ 2.50¢
Fire Box.....	3.00 @ 4.00¢	2.60 @ 2.70¢
Special qualities.....	3.25	@ 3.75¢

Structural Material.—There is a good demand, considering the season of the year, and mills are pretty well employed. Some of their departments may be a little slack, but on the whole there is no room for complaint in regard to the volume of business. Prices are irregular, but average about as follows, according to delivery, character of order, &c.: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.85¢ @ 1.95¢; Universal Plates, 1.9¢ @ 1.95¢.

Sheets.—There is not much demand, and what little there is is competed for at prices which are almost at actual first cost. Complaints from manufacturers are both loud and deep, but all the same they keep whittling prices down until it seems as though there was no bottom to anything. The following quotations are about what manufacturers are supposed to get, but for the time being they are merely nominal, and represent asking prices for small lots:

Best Refined, Nos. 14 to 20.....	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24.....	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26.....	3.15¢ @ 3.20¢
Best Refined, No. 27.....	3.30¢ @ 3.40¢
Best Refined, No. 28.....	3.40¢ @ 3.50¢
Common, ½¢ less than the above.	

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 16.....	3½¢ @ 2½¢
Best Soft Steel, Nos. 18 to 20.....	3¢ @ 3½¢
Best Soft Steel, Nos. 21 to 24.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 25 to 26.....	3½¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28.....	3½¢ @ 4¢
Best Bloom Sheets, ½¢ extra over the above prices.	
Best Bloom, Galvanized, discount.....	.70 and 5¢

Old Material.—There is a little more inquiry and there is some prospect of better prices in case the inclement weather continues. Mills are shopping around for material, and find quotations to be about as follows: Old Iron Rails, \$18 @ \$19, delivered; Old Street Rails, \$19 @ \$20; Old Steel Rails, \$15 @ \$16; No. 1 Railroad Scrap, \$16 @ \$16.50, Philadelphia, or for deliveries at mills in the interior, \$16 @ \$17, according to distance and quality; \$8 @ \$9 for No. 2 Light; \$11 @ \$12 for Machinery Scrap; \$11 @ \$12 for Wrought Turnings; \$8 for Cast Borings, and nominally \$20 for Old Fish Plates, and \$13 @ \$14 for Old Car Wheels.

Wrought-Iron Pipe.—There is very little demand at mills, and for the present no disposition to push business, as it would only result in still further demoralization in prices. Discounts are nominally as follows, but an extra 2½ % or more is

not hard to get if the order is anything worth while: Butt, Black, 55 %; Butt, Galvanized, 47½ %; Lap, Black, 65 %; Lap, Galvanized, 55 %; Boiler Tubes, 65 % all sizes new list; Casing, 62½ % new list.

Barclay W. Cotton & Co. continue the business in Iron and Steel, which for several years was done under the firm name of Esherick, Cotton & Co., at 418 Walnut street, Philadelphia.

Cleveland.

CLEVELAND, OHIO, January 9, 1893.

Iron Ore.—Some inroads into the immense stacks of unsold Ore heaped upon the docks at Cleveland, Fairport and Ashtabula are being made, but active operations are not anticipated for two or three weeks to come. Only 14,000 tons of Ore were sent forward to the furnaces during the week just closed, as against 23,000 tons for the corresponding week in 1892. Some non-Bessemer Hematite Ores are selling at \$3 per ton, Cleveland, and future sales are likely to be made on substantially the basis of these figures. Some Bessemer Hematites are asked for at intervals and an occasional sale at about \$4 per ton, Cleveland, is reported. Although the local papers quote this grade of Ore at \$4 @ \$4.50, the fact remains that only the best grades of Bessemer Hematites command \$4 @ \$4.10. Both buyers and sellers say that absolutely nothing is being done in the way of sales of Ore to be mined in '93, and that prices will not be established for six weeks or two months more. As stated in last week's *Iron Age*, the price at which Mesaba Ore can be sold in Cleveland the coming season will go a long way toward fixing quotations for the old established ores. A very careful analysis of the two cargoes of this Ore sent down at the close of navigation last year has been made and the mine owners appear to be satisfied with the result. If this Ore should be sold at \$3.75, Cleveland, as intimated, it will mean a tumble in quotations for the old established Ores. Indeed, there seems to be no doubt about cheaper Ore the coming season, and the initial sales this year will be watched with great interest.

Pig Iron.—Bessemer Iron is still selling for \$13.65 @ \$13.75 per ton in 100 and 500 tons lots, but prices are not well established and an inquiry for a substantial order of Bessemer Forge or Foundry Irons brings out so many sellers that the prospective purchaser has little difficulty in obtaining concessions. One dealer said to day that he believed a heavy order for Bessemer could be placed at \$13.60, Cleveland delivery. We hear of a sale of about 200 tons at \$13.70, Cleveland. Gray Forge may be quoted at \$12.40 @ \$12.50, Cleveland. No. 1 Foundry is quoted at \$14; No. 2 at \$13.50, and No. 3 at \$13. Soft Silveries are quoted at \$14.20 @ \$14.60 with a somewhat small demand. Foundry Irons are still weak. In fact the whole market for Pig Iron is weak, and there is no immediate prospect of an improvement.

Old Rails.—The margin of profit on Old Americans is so small that dealers do not exert themselves to find purchasers. The supply is seemingly inexhaustible. We quote Americans at \$19.75 @ \$20, Cleveland.

Muck Bars.—The market is rather slack and prices are not very firm. Dealers quote \$24.25 @ \$24.50 for the best grades of Muck Bar, Cleveland delivery.

Nails.—Continued dullness and no improvement in prices pretty nearly summarizes the condition of the market for both Steel Wire and Cut Nails.

Manufactured Iron.—A fairly good business in Common Bars at 1.60¢ @ 1.65¢ is reported, although orders received some time ago are occupying the attention of the manufacturers principally, a considerable falling off in the demand having occurred.

Scrap.—Some business is being done at unchanged quotations. No. 1 Railroad Wrought is quoted at \$15; Cast-Iron Borings at \$7.50; Wrought Turnings at \$10, and Cast Scrap at \$11 per ton, Cleveland.

Old Wheels.—The demand is only fair. Sales are reported at \$23.75 @ \$24, but the amounts involved were small.

Barb Wire.—Galvanized is quoted at \$2.40 and Painted at \$2, carload lots, Cleveland. The demand is improving.

Sheets.—The market is firm and a good demand for special shapes is reported.

Freight.—The following schedule of rates is now in force: Pig Iron: Valley points to Cleveland, 60¢ per ton; to Pittsburgh, 60¢. Muck Bar, Blooms, Billets, Scrap, Iron and Steel Rails, Old Wheels, &c.: Valley points to Cleveland, 70¢ per ton; to Pittsburgh, 75¢ per ton; to Boston, \$3.10 per ton; to New York, \$2.70 per ton; to Philadelphia, \$2.10 per ton; to Newark, \$2.50 per ton.

Announcement is made that A. C. Saunders retired on January 1 from the firm of M. A. Hanna & Co., at Cleveland, Ohio. The business will be continued under the same firm name by M. A. Hanna, L. C. Hanna, C. C. Bolton and D. R. Hanna.

Cincinnati.

Office of The Iron Age, Fourth and Main Sts.,
CINCINNATI, January 11, 1893.
(By Telegraph.)

There has not as yet been such a revival in the demand for Pig Iron as to call for any change in quotations; large buyers are not in the market, but sellers are not disposed to make any material concession as long as there is a decrease in stocks going on from month to month, but at the same time they are free sellers at the current quotations, with perhaps the exception of Gray Forge, which is not offered under \$9 per ton, f.o.b. Birmingham, and perhaps for this reason there is not much doing in it, for buyers' views are 25¢ per ton less. At the same time there have been some transactions in No. 3 Foundry at \$9.50 at furnace, but the standard Iron companies are not offering to sell at this price. There has been some increase in the distribution of Pig Iron for current consumption in which nearly all kinds are represented, mainly single carloads, but one or two lots reached 500 tons and the previous week a lot of 1250 tons was sold for delivery during the first six months of the year. Included in the sales this week was a moderate quantity of Southern Car Wheel Iron. Taken as a whole the market cannot be said to have changed in any essential particular, and sellers appear to have confidence in the future. Quotations are follows:

Foundry.

Southern Coke, No. 1.....	\$13.75 @ \$14.00
Southern Coke, No. 2.....	12.50 @ 12.75
Southern Coke, No. 3.....	12.00 @ 12.25
Ohio Soft Stone Coal, No. 1.....	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2.....	15.00 @ 15.50
Mahoning and Shenango Valley.....	15.75 @ 16.75
Hanging Rock Charcoal, No. 1.....	19.15 @ 19.50
Hanging Rock Charcoal, No. 2.....	18.60 @ 19.00
Tennessee and Alabama Charcoal, No. 1.....	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2.....	15.50 @ 16.00

Forge.

Gray Forge.....	11.50 @ 11.75
Mottled Neutral Coke.....	11.25 @ 11.50

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	18.75 @ 19.00
Lake Superior Car Wheel and Malleable.....	17.75 @ 18.00

Louisville.

LOUISVILLE, KY., January 9, 1893

Extreme quiet is the prominent feature of this market. Buyers who have not covered for wants ahead seem determined not to contract at present prices, and leading Southern furnaces are equally determined not to shade prices. Considering that some large buying must be done in the near future, these sales will determine what course the market is to take.

We quote for cash, f.o.b. cars Louisville:

Southern Coke, No. 1 Foundry....	\$13.25 @ \$13.50
Southern Coke, No. 2 Foundry....	12.00 @ 12.25
Southern Coke, No. 3 Foundry....	11.50 @ 11.75
Southern Coke, Gray Forge.....	11.25 @ 11.50
Southern Charcoal, No. 1 Foundry	15.00 @ 16.00
Southern Car Wheel.....	17.50 @ 17.75

Detroit.

WILLIAM F. JARVIS & Co. of Detroit, Mich., under date of January 9, 1893, write: While the natural expectation of sellers was that the usual holiday dullness would obtain in this locality, as well as elsewhere, we are pleased to note that there were several rather notable exceptions in the matter of purchase of Pig Iron. These were confined largely to Charcoal Iron, and three or four orders were placed with our local furnaces and elsewhere, aggregating a considerable tonnage for reasonably prompt delivery. These are the first really notable transactions with one exception that have occurred in our local market since the close of navigation, and it is worthy of notice that the prices which had been slightly advanced, were fully maintained for these orders. A fairly steady business of a small nature was also seen for foundry grades of metal, and sellers are looking for larger transactions after the time of inventory has been passed and foundries have squared away for another year's business. On Finished Material there has been a good volume of trade with prices firm. We place quotations as follows:

Lake Superior Charcoal, all numbers.....	\$16.50 @ \$17.00
Lake Superior Coke, Bessemer....	16.00 @ 16.50
Lake Superior Coke, Foundry, all ore.....	16.00 @ 17.00
Standard Ohio Blackband (40 per cent.).....	16.50 @ 17.00
Southern No. 1.....	14.50 @ 15.00
Southern Gray Forge.....	12.50 @ 13.00
Jackson County (Ohio) Silvery.	17.75 @ 18.25

New York.

Office of The Iron Age, 96-102 Reade street,
New York, January 11, 1893.

American Pig.—Sellers complain that the trade is very dull, and that foundrymen generally are very indifferent. From the West come reports that Standard Birmingham brands are offered by leading commission houses at cut prices. We quote Northern brands at \$14.75 @ \$15.25 for No. 1; \$14 @ \$14.50 for No. 2; \$13 @ \$13.50 for Gray Forge, tide-water. Southern Iron, same delivery, \$14.75 @ \$15 for No. 1; \$13.75 @ \$14 for No. 2 and No. 1 Soft; \$13.25 @ \$13.50 for No. 2 Soft; \$12.75 @ \$13 for Gray Forge.

Spiegeleisen and Ferromanganese.

—We note several sales of Spiegeleisen involving about 1000 to 1500 tons at private terms, bargains having been offered to buyers. Nominally 20 % Spiegeleisen may be quoted \$26 @ \$26.50. Ferromanganese is weaker, sales having been made under \$59. We quote \$58.75 @ \$59 ex-ship for 80 % foreign Ferro.

Billets and Rods.—Eastern mills have been able to contract for delivery during the second half of the year on the basis of about \$22, Pittsburgh, while for deliveries during the first half \$21.75 has been done. There is nothing doing in Foreign Billets, re-export orders having been covered some

time since. Business in Foreign Rods for the Pacific Coast pending for some time has been deferred on account of high freights. We quote Steel Billets, tide-water, \$24.25 @ \$24.75; foreign, \$29.25 @ \$30; Wire Rods, \$32.50 @ \$33; foreign Wire Rods, \$40 @ \$40.50, and Swedish Rods, \$54.50 @ \$56.

Steel Rails.—The market is again very quiet so far as the Eastern mills are concerned, the reduction in the price having apparently not stimulated buying. In other sections the mills do not seem to be taking a very heavy business, an evidence of which is the fact that Edgar Thomson has again gone on Billets. We continue to quote \$29 at Eastern mills. Foreign Rails are offered at 78/, English mill.

Structural Iron and Steel.—Current business is restricted to moderate requirements. There is, however, a good deal of figuring going on and some very large work will come into the market when the season fairly opens. Among others there will be a 17-story building on lower Broadway, which will take about 3000 tons of material. In Plates the market is dull and low prices are being made. There is some talk that shipowners will endeavor to secure special legislation to obtain permission to import ship Plates for the new transatlantic liners. It is reported that 1.90¢ was the lowest figure named on these Plates on account of the very stringent specifications proposed. The talk alluded to is generally regarded as a bluff. The Rochester contract for riveted water pipe, involving from 8000 to 9000 tons of Plates, has not yet been placed. It is reported that there was a wide divergence in the bids. The price at which the recent elevated work in Chicago was taken is given at 3¢ erected, which is, considering the local labor market, the lowest on record for this class of work. We quote Beams at 2.25¢ @ 2.75¢ for small lots and 2¢ @ 2.25¢ for round lots, according to sizes; Angles, 1.85¢ @ 2¢; Sheared Plates, 1.85¢ @ 2.10¢; Tees, 2.10¢ @ 2.30¢; Channels, 2.10¢ @ 2.20¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.85¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.5¢ @ 2.75¢ for Marine, and 2.60¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock; Common, 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.90¢ @ 2.1¢, and Links and Pins, 2¢ @ 2.20¢; Steel Hoops, 1.90¢ @ 2¢, delivered.

Track Material.—We quote Spikes, 1.90¢ @ 2¢; Fish Plates, 1.60¢ @ 1.65¢; Track Bolts, square nuts, 2.40¢ @ 2.60¢, and hexagon nuts, 2.70¢ @ 2.80¢, delivered.

Stock Warrants.—Return of Stocks, &c., by American Pig Iron Storage Warrant Company:

	Tons.
Stock in yard November 30, 1892.....	81,600
Put in yard for 31 days ending December 31, 1892.....	1,300
Total.....	84,900
Withdrawn 31 days ending December 31, 1892.....	3,200
Net stock in yard December 31, 1892...	79,700

The Manhattan Equipment Company, as the successors of the old firm of Reginald Canning & Co., will continue the business at 115 Broadway, New York City, under the management of Thomas B. Inness, who has been in the railroad equipment business for a number of years.

We observe that the American Iron and Steel Association proposes in the future to discard its net ton of 2000 pounds in its pig iron statistics, and will fall into line with the rest of the trade by accepting the gross ton of 2240 pounds.

Metal Market.

Copper.—Nothing new has come to the surface in the market for this metal during the past week. Consumers are still drawing from receipts on old contracts sufficient supply to cover immediate wants, and, having probable requirements for a little time ahead well provided for, purchase in a perfunctory manner at the present time. Shipments to Europe are fair, but new export orders continue to be few in number and chiefly for unimportant quantities. Despite this inaction, however, prices remain quite steady, and the only sign of pressure to sell was in the case of a small lot or two of Lake Ingot offered from second hands at 12.20¢. Apart from this 12½¢ is the lowest quotation, while 12½¢ @ 12½¢ is generally asked. Casting brands remain at 11½¢ @ 11½¢, with the inside rate apparently the exception.

The monthly report of the Bureau of Statistics affords the following comparison of exports from the United States during the month of November and the 11 months ending November 30:

Ore—	November—		Eleven Months—	
	1892 tons.	1892 tons.	1892 tons.	1891 tons.
To United Kingdom.....	5,607	1,671	44,796	33,523
Germany.....	.....	.....	1,462	2,064
Other Europe.....	.....	.....	165	216
Total.....	5,607	1,671	46,423	35,806
Ingots—	Pounds.		Pounds.	
	1892	1892	1892	1891
To United Kingdom.....	480,906	899,004	2,874,969	15,722,659
Germany.....	440,239	199,248	5,699,949	5,776,582
France.....	564,471	1,129,448	6,756,681	24,823,048
Other Europe.....	797,081	1,532,475	10,913,996	18,245,364
Elsewhere.....	200	.....	99,206	168,190
Total.....	2,282,897	3,760,175	26,344,801	64,735,823

Pig Tin.—The record of Metal Exchange dealings shows a total of over 500 tons turned during the past week, including 110 tons prompt delivery, 100 tons ex-steamships then afloat but now in port, and the balance for February delivery. Nearly all the sales ex-ship were on terms involving payment on presentation of shipping documents, and suggested not only a willingness on the part of some importers to turn Tin into cash as quickly as possible, but some desire to prevent accumulation of individual holdings. Current month and February deliveries also declined, despite careful nursing of the market by a few operators, and, upon the whole, the market reflected what would appear to be a natural effect of rather burdensome stocks in the hands of some operators. Still the information is volunteered that supplies on spot and afloat are unusually well distributed among the large handlers of the metal, that consumption in this country is above the January average, if anything, and that, despite the somewhat peculiar character of speculative operations here latterly and the small dealings in London, the market is not as weak as surface appearances would indicate. It is a matter of record, however, that dealers who sold January delivery a week ago at 19½¢ @ 19.80¢ have been able to cover at 19½¢ @ 19.65¢, and that no difficulty has been experienced in covering sales for February delivery at a similar margin of difference.

Pig Lead.—No change has taken place in the situation here or at the West. What the National Lead Company and other "combine" buyers (whose purchases are very difficult to trace) may have done is problematical, but other buyers have purchased very indifferently, and the demand at present is exceedingly slow. Still the offering is comparatively light and reserved at that, while prices are held quite firmly

at 3.85¢ @ 3.90¢ for round lots delivered here.

Spelter.—The demand in this quarter is without visible improvement. Efforts to draw out bids on round lots a shade below the prices at which sales have been making latterly prove fruitless, and the presumption is that consumers are not taking a great deal of liberty with the facts when they state that near future wants are well provided for. Prices are easy at 4.35¢ @ 4.40¢ for good Western brands in round lots.

Tin Plate.—Arrivals of 85,000 boxes or more during the past week have served to replenish jobbers' assortments, and the supply is better at present than it has been for some little time past, since spot business has not only been slow but chiefly of retail character. Prices are a shade easier on some lines of Ternes and very light-weight Bessemer Cokes. Contracts for forward delivery have been unimportant, and interest in futures is momentarily tame. We quote spot prices as follows: Coke Tina—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, \$5.35; light

weights, \$5.10 for 100 lb, \$4.95 for 95-lb, \$4.80 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60 @ \$5.65; Siemens Steel, IC basis, \$5.75; IX basis, \$6.80 @ \$6.85. IC Charcoals—Melyn grade, ½ X assortment, \$6.40; Crosses, \$8; Allaway grade, any assortment, \$5.70; Crosses, \$7; Grange grade, any assortment, \$5.80; Crosses, \$7.10. Charcoal Ternes—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.75; do., 20 x 28, \$13.50; Dean, 14 x 20, \$5.30 @ \$5.35; do., 20 x 28, \$10.50 @ \$10.60; D. R. D. grade, 14 x 20, \$5.25; do., 20 x 28, \$10.50; Alyn, 14 x 20, \$5.35; do., 20 x 28, \$10.60; Dyffryn, 14 x 20, \$5.50; do., 20 x 28, scarce. Wasters—S. T. P. grade, 14 x 20, \$5.10; do., 20 x 28, \$9.75; Abercarne grade, 14 x 20, \$5; do., 20 x 28, \$9.75.

The firm of Henry Nash & Co., Tin Plate and Metal merchants, of 12 and 14 Tower Building, North Water street, Liverpool, England, have been dissolved, Elisha Smith retiring. The business will be carried on in the future by Henry Nash.

Financial.

That the currency question is uppermost in the thoughts of financiers appears from the simultaneous action of the New York and Boston Chambers of Commerce, pointing out the increasing difficulty of redeeming the Government obligations in gold so long as the heavy monthly purchases of silver bullion are continued. At Washington the conflict of opinion in both Houses upon the silver question is so sharp that there is little hope of any agreement during the term of the present Congress, so that the purchase of silver bullion under the Sherman act of July 14, 1890, will probably continue until the next Congress

can act. Meanwhile the exports of silver bullion are unprecedented owing to commercial conditions. The bulk of the metal eventually finds its way to the Orient in payment for commodities. Of \$5,000,000 specie exports from New York since January 1, over one-third is silver. Ex-Secretary Fairchild, who is understood to be the prospective incumbent of the Treasury office, in an interview this week pointed out that neither the Sherman nor the Bland act can keep silver at par indefinitely. It is the fear of failure in this respect, Mr. Fairchild said, "that causes Europe to sell our securities whenever the market is favorable for that purpose, and to decline to invest in them, the net result being the drain of gold from our banks and from the Treasury. Unless something is done soon to quiet this fear it will be impossible for our Government to sustain at par the great volume of currency in circulation among our people. The only effective remedy is the absolute stoppage of the issuance, in any form, of any more money which must lean upon the Treasury for support." He argued from an array of figures showing the operation of the Sherman act and the Bland act respectively that an absolute stoppage of silver purchases and the issuance of further obligations on their account is necessary. This done, "an immediate revival would be seen in every direction."

The virtual dissolution of the Reading coal combine, by the withdrawal of the New Jersey Central, is the result of the vigorous attacks from all quarters, and the effort now is to restore the previous order of things without delay. One reason for speedy action may be assumed to be the prospect of a report to Congress by the committee whose investigations were recently concluded and which, it is said, will recommend legislation making similar combines impossible.

The stock market was irregular. Pending the action of Congress respecting silver investors stand aloof to await events. Western stocks were affected by a report that the Legislature of Nebraska would take measures still further to oppress railroad corporations in that State, and Reading was freely sold on reports of contemplated adverse legislation; also by the action of the managers in borrowing money with which to pay interest on bonds, giving as security the best collateral in the treasury. Reading's annual report was unfavorably received.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended.....	100
U. S. 4s, 1907, registered.....	113½
U. S. 4s, 1907, coupon.....	113½
U. S. currency 6s.....	107½

The weekly bank statement showed a gain of \$4,795,500 in cash and of \$2,102,900 in surplus reserve, which now stands at \$8,942,000; loans expanded \$3,000,000. After this publication money was more freely offered. Rates for commercial paper were unchanged. The requirement of the foreign houses that a gold note shall be given with all time loans prevents brokers from accepting many offers. A comparison of the present position of the banks with previous years shows that while they are not in as good shape as last year they are steadily gaining in important respects, though they hold \$22,000,000 less specie than a year ago. The excess of reserve above legal requirements is \$9,000,000, against \$19,000,000 a year ago and \$13,000,000 in 1891. In the West the demand for money is general.

Foreign exchange was quiet and firm. Nominal rates were unchanged at \$4.86½ for 60 days and \$4.88½ for demand. It is probable that gold will be shipped on Saturday, depending on the amount of securities purchased by foreigners. Bar silver closed in London at 38½d. per ounce. The commercial price of bar silver in New York was 82½¢ per ounce.

The merchandise markets are generally firm. The Government crop report making the yield of wheat 515,949,000 bushels and corn 1,628,464,000 bushels—the former valued at \$322,000,000, the latter \$642,000,000—checked the upward course of prices. Western wheat receipts continue large, being 12,000,000 bushels greater since August 1 than a year ago, while exports for the month are about 3,000,000 bushels less. Pork prices in Chicago reached \$19.10 a barrel, the highest point for ten years. Whisky was marked up to \$1.35 per gallon, the highest for years. Flour is unusually dull. Cotton advanced ½¢. Foreign imports are again larger. Coffee declined. Raw sugar quiet. The dry goods market is strong.

Statistics of the foreign commerce of New York for 1892 show enormous imports, exceeding anything before recorded in the history of the port, the total being \$583,707,838, which is accounted for by the fact that goods to the value of nearly \$318,000,000 were admitted free of duty, such as sugar, coffee and tea. The total exports, including \$93,204,967 in specie, were \$470,928,941. The balance of trade for 11 months, for the entire country, was \$105,000,000, or \$35,000,000 less than for the corresponding months in 1891.

Coal Market.

Events in the Anthracite Coal trade follow in rapid succession. A week ago reference was made in these columns to the action of President Maxwell of the New Jersey Central Railroad in practically withdrawing from the Reading combine, at the same time taking along the Lehigh & Wilkesbarre Coal Company. This proceeding was commonly supposed to be in anticipation of possible legal proceedings prejudicial to the combine arrangement. The tendency is still toward a return to the conditions previously existing, but so far as the Coal trade is concerned there is no further change in the situation. Prices are maintained and restriction continues as before. Pea and Buckwheat are still scarce and dear, some dealers being out of the market for these sizes. Quotations are: Pea, \$2.40 @ \$3.15; Buckwheat, \$1.85 @ \$2.15. In regard to some other sizes large deliveries cannot be promised at once on account of difficulties in transportation. One effect of talk about a coming dissolution of the combine is to check sales, as consumers are keeping aloof to await events.

The total amount of Anthracite Coal sent to market for the week ending December 31 was 502,067 tons, and the total amount of Anthracite mined during 1892 was 41,476,688 tons, compared with 40,416,193 tons for the same period in 1891, an increase of 1,060,495 tons.

The Pennsylvania Railroad brought to market last week 230,000 tons of Coal and the Reading 360,000 tons, of which 28,000 tons were sent to New York.

The Bituminous Coal trade has been interrupted by difficulties in transportation and prices are firm.

A Hazleton dispatch says that a deal, whereby 22,000 tons of Coal per day will be diverted from the Reading Railroad to Coxie Brothers & Co.'s road, has just been consummated between Coxie Brothers & Co. and C. Pardee & Co., Pardee, Sons & Co. and Pardee, Brothers & Co.

The message of Governor Routt of Colorado refers to the growth of coal mining in Colorado, the coal production for the present year being 3,770,000 tons, while in 1875 it was less than 70,000 tons.

Referring to the American combine which has obtained possession of the Cape Breton coal mines, the Sydney Reporter says \$10,000,000 of American capital will be invested in Eastern Nova Scotia industries.

A special from Mount Carmel speaks of extensive preparations for a larger output of Coal. At nearly every colliery extensive improvements are under way. Especially are the Pennsylvania Railroad people active in their efforts to add to their tonnage. At the Richards Colliery the Union Coal Company have well under way a mammoth structure which will ship 12,000 tons weekly over the Pennsylvania system. Westward 3 miles, shafts are sinking from which the supply for what will be the largest breaker in the lower region will be drawn. Second to these are the developments being conducted at Midvalley No. 2, for the Midvalley Coal Company. The plans call for the erection of a breaker with a capacity of 2000 tons per day. Fourteen hundred acres of choice Coal land known as the Bellmore tract, on which every vein from the Orchard to the Lykens Valley is to be developed by a strong syndicate. The tonnage will be sent to Philadelphia and New York exclusively over the Lehigh Valley Railroad of the Reading system. At the Mount Carmel Colliery \$200,000 have been spent in sinking a new slope of the mammoth vein. At Morris Ridge tunnels have been driven to a new vein and at the eastern extremity of the Montana basin and Bethlehem capitalists have decided to commence operations.

Boston.

Office of The Iron Age, 146 Franklin St.,
BOSTON, January 10, 1893.

The Pig Iron market is quiet, as it has been ever since the holidays. The changing of accounts and the adjustment of ledgers always make a dull Iron trade at this particular season, but this year it is known that buyers are holding off, hoping to get Iron at easier prices. The New England foundry people are very busy, and are requiring a good deal of Iron, but they bought heavily in the late autumn, and thus they are enabled to hold off from purchasing freely. Later they will buy Iron, but they expect slight concessions. Brokers and dealers admit that quotations would be shaded for the sake of trade, but at the same time they are inclined to regard the position as really firm and not liable to any considerable decline, for the reason that Iron is abnormally low at the present time.

So far as the New England foundry people are concerned, they generally look for a trade in 1893 that will require a good deal of Iron, but this Iron they feel that they must buy at low prices. Business is likely to hold good with them, for while they are constantly losing some feature in their trade from the fact that they cannot compete with the cheap Iron and Coal of the West as soon as a line of castings becomes common and generally used, yet they still own a good many patents, besides new features are constantly coming up requiring new lines of goods. New England has lost heavily of her Iron trade, but so far as her foundries are concerned, they have found new features enough to make more than they have lost.

Southern Pig Iron laid down in Boston is quotable at: No. 1, \$15.50 @ \$16; No. 2, \$14.50 @ \$15; No. 3, \$14 @ \$14.50. It is understood that the Southern furnace people want orders and it is admitted that the above quotations could be shaded.

Pennsylvania and Western Irons are quotable as follows, at shipping port: Pennsylvania, No. 1, \$15; No. 2, \$14; Gray Forge, \$13.50. Small spot lots would cost more by the addition of freights and other charges. Western Irons delivered in Boston are quotable at \$17 @ \$17.50.

The Bar Iron market is quiet, with only a fair trade. Ordinary refined Bars are quotable at \$1.70 @ \$1.75 from mill and

at \$1.75 @ \$1.80 from store here. What are termed Best Bars, made from puddled iron, are quoted at \$1.95 @ \$2.10 from mill and at \$2.10 @ \$2.20 from store here.

But it is the Bessemer Steel trade that is attracting the most attention at this time. It is a fact that the use of Bar and other manufactured iron with New England machinists and manufacturers is fast going out of date and Bessemer Steel is taking its place. A prominent broker remarks that out of specifications for some 1800 tons of car builders' iron materials lately placed by him, there is scarcely a ton of iron, but all steel. Machinists and manufacturers are rapidly coming to like this form of steel in preference to iron. A Providence manufacturing concern, making a patented article that requires so much of small shafting that they are obliged to turn it at a high rate of speed, has formerly had a great deal of trouble with iron. The foreman has lately been persuaded to try Bessemer Steel, and he expresses himself as much pleased with it. He says that the turning tool stands up better, even at a high rate of speed, than iron ever allowed it to do. At the same time this steel is being furnished to manufacturers at from 5% to 10% cheaper prices than iron. Or, in other words, where bar iron can be furnished at a mill price of \$1.70, Bessemer bar steel is being furnished at \$1.55 @ \$1.60. The manufacturers are getting a better article for less money.

For structural iron the demand is good. Building promises to be good the coming season and the inclination is to use more iron. Already specifications are out for more than 1000 tons of beams and columns for buildings in and near Boston. The Rumford Falls Pulp & Paper Company, at Rumford Falls, Maine, have contracts for some \$10,000 worth of structural and machinery iron. That is a growing town, and the volume of iron wanted now will doubtless be doubled before the season is over. There is little danger but what New England will hold her own this season, so far as machinery iron is concerned. The fever for electric lighting is as strong as last year, and the inclination is to turn every idle water power into means for lighting streets and homes, as well as the propulsion of cars on electric railways. The number of water wheels put in in New England this year is likely to be large, and the demand for machinery and machinery iron will be good.

For steel rails the demand also promises to be good, especially steel rails of a light character. Many hundreds of miles of electric railways are proposed in the New England States. Almost every town of any size wants an electric railroad to the next town, and companies are being projected and actually formed. So far as the steam railways are concerned, they are not buying steel rails at present. It is true that the combination has lowered the price from \$30 to \$29 at mill, but prominent railroad men and buyers of rails do not feel at all satisfied that \$29 is the bottom price for steel rails in 1893. They seem to be afraid of offering \$28 even. They are simply not buying, though it is time for them to buy, because they do not regard the market as settled.

For shipbuilding the request for steel promises to be good at Bath, Maine. It is true that the building of the second big Government vessel was lost by the Bath builders, but they already have a contract for a \$300,000 steamer for a New York line and another order of about the same volume that the company is sure of, making \$600,000 worth of steamers to be built there already under contract and agreement. These steamers will require some \$200,000 to \$300,000 worth of steel, and a Boston broker already has contracts for a considerable part of it.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, January 11, 1893.

There has been a livelier business in Scotch pig iron warrants, including some large purchases of three months' futures, and prices were advanced to 42/. The stock in public stores has decreased 2000 tons, being now 338,000 tons, and it is asserted that cash lots are firmly and confidently held. The yearly statistics show that production was 302,788 tons larger in 1892 than in 1891. Cleveland warrants have been neglected and the market is weak. Sales have been made at as low as 35/7½. Stocks in public stores have increased to 29,000 tons. Cleveland production last year was 685,263 tons smaller than in 1891. Hematite warrants have not varied much from 46/, but dealings are still on a very limited scale. West coast makers are very firm on prices as several furnaces will probably be dumped shortly owing to comparatively high cost of materials.

Exports of pig iron last month amounted to 46,000 tons, against 58,000 tons in December, 1891.

Pig tin has been quiet during the week. Operators are disinclined to deal extensively, although the discount on three months' futures has been largely diminished and the bulk of stocks remain in few hands. Prompts sold at £90. 15/ on Tuesday.

The copper market has been easier, chiefly under the weight of unfavorable statistical position. The decline prompted free buying for a day or two and temporary improvement in prices, but slower demand and free selling caused an easier feeling later. Demand from consumers is poor. Furnace material is held at comparatively high prices. About 250 tons Montana matte were sold on private terms.

Tin plate market does not improve. Some sales are making of squares and odd-size cokes, also oil sizes, but business otherwise is dull, and some makers' prices are 2d. lower on ordinary Bessemer. Exports in December were 34,000 boxes, against 28,000 boxes in December, 1891. The amounts shipped to the United States were 28,000 tons and 13,000 tons respectively. Stocks at Swansea 169,000 boxes against 110,000 boxes a year ago.

Scotch pig iron.—Prices for makers' brands have been quite firm, but business rather slow.

No. 1 Coltness,	f.o.b. Glasgow.....	55/
No. 1 Summerlee,	" "	50/6
No. 1 Gartsherrie,	" "	51/6
No. 1 Langloan,	" "	53/
No. 1 Cambro,	" "	44/
No. 1 Shotts,	" at Leith.....	53/
No. 1 Glengarnock,	" Ardrossan.....	49/6
No. 1 Dalmeilington,	" "	49/
No. 1 Eglinton,	" "	46/6

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/8.

Cleveland pig.—The market quiet and prices with makers' iron offered at 36/3, f.o.b. shipping port, for No. 3 Mid-dlesborough.

Bessemer pig.—There has been no improvement in business, but prices remain

steady. Makers quote 47/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese.—Quiet market and prices greatly nominal. English 80% quoted at £11. 11/3, f.o.b. shipping port.

Steel rails.—Business moderate and at about former prices. Heavy sections quoted at £4, f.o.b. shipping port.

Steel slabs.—Demand continues slow and prices are still rather weak. Bessemer quoted at £4, f.o.b. at shipping point.

Steel billets.—Buyers operate sparingly and prices are easy but show no decided change. Bessemer, 2½ x 2½ inches, quoted at £4, f.o.b. shipping point.

Steel blooms.—A small business passing, chiefly at old prices. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old iron rails.—No improvement in the demand, and prices still greatly nominal. Tees quoted at £2. 10/ @ £2. 12/6 and Double Heads at £2. 15/, f.o.b.

Scrap iron.—Market remains quiet, and prices are without change. Heavy wrought iron quoted at £3. 2/6 @ £3. 5/, f.o.b.

Crop ends.—Demand light and prices as before. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured iron.—Last week's prices are quoted, but the market is dull and prices lean in buyers' favor. We quote, f.o.b. Liverpool:

Staff, Ordinary Marked Bars	£ s. d.	£ s. d.
Common	6 7 6	6 10 0
Staff, Bl'k Sheet, singles	6 7 6	7 10 0
Welsh Bars (f.o.b. Wales)	5 7 6	5 10 0

Tin plate.—No change at the close, buyers and sellers being wide apart. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/6 @ 13/9
IC Bessemer Steel, Coke finish	12/0 @ 12/3
IC Siemens	12/3 @ 12/6
IC Coke, B. V. grade 14 x 20	12/0 @ 12/3
Charcoal Terne, Dean grade	11/9 @ 12/

Pig tin.—Market closed dull and rather weak. Straits quoted at £91. 2/6 for spot and £91. for three months' futures.

Copper.—Merchant bars at the close quoted at £46. 2/6 spot and £46. 12/6 three months' futures. Best selected, £51.

Lead.—Market has continued slow and prices are rather weak at £9. 15/ for Soft Spanish.

Spelter.—The market dull and prices weak at £18. for ordinary Silesian.

St. Louis.

(By Telegraph.)

Pig lead.—The market is quiet, and sales are limited to carload quantities at from 4.57½¢ to 4.60¢. Offerings are made for delivery during the next 30 days at these figures, which would seem to indicate that prices are not likely to advance very soon.

Spelter.—This metal does not show much change. Lots for immediate shipment command 4.05¢. Statistics at hand indicate that the production of spelter will be something over 90,000 tons, which is a heavy increase over 1891. The increase in consumption is not commensu-

rate with this, which fact, of course, tends to depress the market. The outlook cannot be called encouraging.

Pittsburgh.

Office of The Iron Age, Hamilton Building,
Pittsburgh, January 10, 1893.

Very little that is favorable can be said this week regarding the way in which business in the Iron and Steel trades has started off in the new year. Although prices on nearly all kinds of raw and finished material are considerably lower now than they were a month ago, the volume of business continues small, buyers seemingly having no fears that prices will go higher for some time at least. During December, when there was practically no business being done, hopes were held out that after the holiday season was over buying would commence and a better feeling would prevail. It can be truthfully said that these expectations are not being realized, but, on the contrary, the situation seems to be growing worse. Should an improved demand be experienced, it would undoubtedly favorably affect prices; but as long as buyers continue to confine their purchases to lots for immediate requirements, no betterment in prices can be reasonably expected.

Pig Iron.—Since our report of last week prices on both Bessemer and Gray Forge have gone off to considerable extent, sales of Bessemer having been made on a basis of \$13.50, f.o.b. cars Pittsburgh and of Gray Forge at \$12.25, Pittsburgh. A peculiar characteristic of the market just now is the fact that, notwithstanding prices are much lower to-day than six months ago, and stocks have very much decreased, there is more disposition among furnacemen to force sales of Iron at this time than at any period within the last six months. If this course is persisted in there will be very little chance of any improvement in prices, but, on the contrary, it may result in values being pushed down still further, although this is not expected. Probably never in the history of the Pig Iron trade has the situation been more discouraging than it is at this time. As an indication of the situation prevailing, it is only necessary to say that it is almost impossible to make sales of Iron even in the face of the very low prices prevailing. It would certainly require a furnace to be equipped with the most modern machinery to enable it to make Gray Forge Iron and deliver it to buyer's mill for \$12.25 per ton, but, notwithstanding this, buyers do not seem to think that there will be any improvement in prices in the near future, and are still buying in small lots, principally for immediate requirements. The same condition of affairs exists as regards Bessemer Iron, although we are advised that one large block of 10,000 tons changed hands last week, the deliveries being 2500 tons per month for January, February, March and April at a price said to be slightly less than \$13.50, Pittsburgh. Some few sales of Bessemer in small lots continue to be made at prices equal to \$13.60 @ \$13.65, Pittsburgh, although \$13.50 may be considered as the price of Bessemer to-day. We quote the market as follows:

Neutral Gray Forge.....	\$12.25 @	cash.
All-Ord Mill.....	12.50 @	12.75, "
No. 1 Foundry.....	14.00 @	14.10, "
No. 2 Foundry.....	12.00 @	13.10, "
Charcoal Foundry No. 1....	19.00 @	20.00, "
Charcoal Foundry No. 2....	18.50 @	19.00, "
Bessemer Iron.....	13.50 @	13.60, "

Bessemer Billets.—The Edgar Thomson Mill of the Carnegie Steel Company, Limited, has gone on Billets. We are advised that since the first of the year some inquiries have been in the market for Billets, but up to this time no sales worthy of mention have been closed. A few small

lots continue to change hands on a basis of \$21.50 and \$21.75, Pittsburgh, the first named being a minimum price. We are advised that two or three concerns in the Wheeling district are pretty well sold up for the first four months of this year, and have announced that they will not take any more orders at less than \$21.75 at mill. Several concerns in the Pittsburgh district are also pretty favorably situated with old orders taken at considerably higher prices than are ruling now. Naturally, these concerns are not meeting the low prices now being made, but are content to take care of business already booked and take their chances with prices when again they enter the market as sellers. In certain quarters the impression prevails that Billets are probably as low as they will go, and buyers who are holding off orders expecting still lower prices will not have their expectations realized. We note a sale of 3000 tons, equal deliveries in January, February and March, at a price equal to \$21.50, f.o.b. cars in Wheeling district, and a sale of 1500 tons, January and February delivery, on the basis of \$21.50, f.o.b. cars Pittsburgh.

Ferromanganese.—Several lots of foreign Ferromanganese have been sold in this market recently at prices equal to \$59.90 @ \$60, f.o.b. cars Pittsburgh. Domestic is still quoted in this market on a basis of \$61, f.o.b. cars at makers' mill, for small lots. It is stated that the works in Eastern Pennsylvania which have recently entered the Pittsburgh market as a seller of Ferromanganese have succeeded in securing some business.

Steel Rails.—Trade in the new year has not opened up as favorable as was expected, although we are advised that a few lots of Rails were sold last week representing a very fair tonnage. The Edgar Thomson Mill, the only Rail mill in this district, has again gone on Billets. Prices remain at \$29, f.o.b. at mill for standard sections.

Structural Material.—Considering the season of the year and the intensely cold weather that has prevailed for three weeks past, the condition of trade is fairly satisfactory. A moderate amount of business is coming in which, with old orders, serves to keep the mills pretty fully employed. While prices have not declined for two or three weeks past, it is intimated that on large lots more favorable prices would be quoted than are given below. For small lots we quote the market as follows: Beams and Channels, 2¢ @ 2.10¢; Angles, 1.65¢ @ 1.75¢; Universal Mill Plates, 1.70¢ @ 1.75¢; Z Bars, 1.85¢ @ 1.90¢, and Tees, 2.10¢ @ 2.15¢.

Steel Plates.—There is nothing new to report this week, the volume of business continuing small, although an improved demand is expected soon, as several orders are said to be in the market. Competition continues keen, and buyers have the advantage of very favorable prices being made, especially where large lots are involved. For small lots we quote the market as follows: Bridge Plates, 1.90¢ @ 2¢; Flange, 2.95¢ @ 2.15¢; Fire Box, 3.40¢ @ 3.45¢; Tank, 1.70¢ @ 1.75¢; Shell, 1.95¢ @ 2.10¢.

Muck Bars.—Considerable business was done in Muck Bars last week, and we are advised of sales representing about 3000 tons for delivery during this and next month. These sales were made to Pipe and Tube mills, and one or two more orders are in the market which will probably be closed this week or not later than next week. We note two sales aggregating 2400 tons on a basis of \$24.25, delivered at buyer's mill, and one sale of 500 tons for which a slightly higher price was obtained. We quote the market for No. 1 Muck Bars at \$24 @ \$24.25, with the last named as the ruling price.

Wire Rods.—During last week four or five buyers were in the market, and it is understood that one lot of about 4000 tons changed hands. Other sales are under negotiation, but buyers have set the price at which they are willing to buy at such a low figure that in one case their offer was declined. The sale of 4000 tons above referred to was made at a price which has not been made public, but is said to be slightly less than \$30 at makers' mill. We quote the market on Wire Rods at \$30, f.o.b. at makers' mill.

Sheets.—A fair volume of business is going, orders from dealers coming in pretty freely. A considerable improvement in demand will no doubt be experienced in the near future, as during February the large buyers generally commence to place their orders. Prices have not shown much change since our last report, and we quote Common Black Sheets as follows: No. 24, 2.55¢ @ 2.60¢; No. 26, 2.65¢ @ 2.70¢, and No. 27, 2.75¢ @ 2.80¢. For Soft Steel Sheets from \$1 to \$2 per ton advance on the above prices is obtained. Galvanized Sheets are in fair demand, and the usual discount of 70 and 10 % is being firmly maintained for Best Bloom.

Merchant Steel.—Business continues to be confined to small lots, which in the aggregate sums up a fair tonnage. Prices are about as given last week, and we quote as follows: Open Hearth Spring and Machinery at 2¢ @ 2.15¢; Machine Straightened Tire Steel, 2¢; Ordinary Tire Steel, not straightened, 1.80¢ base; Sleigh Shoe, flat bars, 2¢; Plow Steel, 2¢ @ 2.10¢, and Tool Steel 6¢ and upward.

Skelp Iron.—Since the first of the year three or four good-sized orders for Skelp Iron have been placed, and considerable business is in negotiation, which will doubtless be closed before this month is out. Although demand is slightly better than during last month, prices have not changed to any extent, and we continue to quote Grooved Skelp at 1.50¢ @ 1.55¢, and Sheared at 1.70¢ @ 1.75¢; four months, or 2% off for cash.

Merchant Bars.—A slight increase in orders since the first of the year is reported, but the volume of business is very much smaller than was expected by manufacturers. It is the impression that orders will come in more freely toward the latter part of this month and during February, for the reason that buyers have not had time as yet to size up their requirements, and will probably not be ready to place their orders for two or three weeks yet. We continue to quote No. 1 Bars at 1.60¢ @ 1.65¢, while old Rail and Scrap Bars are bringing 1.45¢ @ 1.50¢. In the Mahoning Valley Bars are quoted at 1.45¢ @ 1.50¢, half extras.

Barb Wire.—Considerable business has been placed within the last two or three weeks for spring delivery, several concerns reporting that they have booked very largely. The fact that a good many orders have been recently placed has stiffened prices up to some extent, and Painted Barb Wire is now firmly quoted at \$3 and Galvanized at \$2.40, with the usual advance for less than carload lots.

Wire and Cut Nails.—Business in both Wire and Cut Nails continues very slow, and the expected improvement in demand to take place after the first of the year has not been realized. We continue to quote Wire Nails at \$1.40 base, while Cut Nails are ruling at \$1.42 @ \$1.45 on a 30¢ average, f.o.b. cars in Wheeling district.

M. Eiffel, the builder of the great tower and famous in connection with other metallic constructions, is said to be seriously implicated in the Panama financial irregularities.

HARDWARE.

Condition of Trade.

IT IS AS YET too early for a general movement of business, but there is a good deal doing by the larger houses in the way of completing their orders for the coming season. Jobbers and manufacturers are giving considerable attention to the preparation of price-lists, circulars, &c., and making their arrangements in many ways for a vigorous prosecution of business, the situation being such that there is a general impression that the volume of trade will be large, and the various parties competing for it are desirous of securing their share. Travelers are many of them already on the road, but it is rather early as yet for them to be sending in many orders. It is expected that in a week or ten days there will be a more general activity. Prices continue without material change, the market as a whole not being characterized by much strength. Quotations are, however, on many lines exceedingly close, leaving but narrow margins for the manufacturers, which they are endeavoring to widen by economy and improved methods in making the goods. In some lines revised quotations are announced, as referred to below.

Owing to its late receipt, we were compelled to omit from our last issue the following interesting report from Carlin & Fulton, Baltimore:

After a lull in business incidental to the holiday season and to the close of the year, we begin to see a decided improvement, and after inventories are completed, accounts balanced and the results of last year's work ascertained, the indications all point to a rapid recovery in trade.

We do not think, however, that it is well to be too sanguine in prophesying any extraordinary boom, for while in our Southern market the price of its great staple, cotton, has advanced wonderfully, and contrasts most favorably with the depressed prices which existed at the beginning and throughout all of last year, we must remember that this advance is due very largely to a reduced crop and to the fact that in some sections of the country there was an utter failure, and in other sections frequently not more than 25 per cent. of the usual crop gathered, and also the advance in price came in many cases long after the planter had disposed of his product. Still, the present price gives hope for the future, and in a few days nearly every plow throughout our Southern land will be busy

preparing for the crop of 1893, and to quote from a letter just received, "should the next crop reach near 10,000,000 bales its selling price will not go below the cost of production, and with the greatly increased food products which will be gathered, the condition of the South is one full of promise."

We must also remember that now the tide of travel turns toward the pine forests of Georgia and the orange groves of Florida for both health and recreation, and thousands of dollars will be spent by the tourists from the North and by those who cater to their comfort, and the money thus circulated helps wonderfully in the development and improvement of a land which needs but capital and energy.

We understand that the low prices for Naval Stores has interfered somewhat with trade in other sections of our market, but that there is sufficient margin to keep the hands employed, and possibly, as in cotton, there may be a reaction when it is least expected.

In our more immediate neighborhood the farmer laments over the low price of wheat, but we think he can rejoice over his shipments of poultry and eggs and butter and the many other articles which the great cities need and rely upon the agricultural sections for, and possibly were the farmer to average his prices he would find in many ways some compensation for the low price of any one staple, but farming cannot be conducted successfully any more than mercantile business can unless it is done by economy, industry and sound judgment. Business in our mining sections has been somewhat interfered with through the inability of coal shippers to get transportation to the seaboard, but as the railroad companies are doing their best to improve and increase their rolling stock, we may soon look for an improvement in that direction.

The darkest cloud which appears on the business horizon is the uncertain state of the finances of this country with regard to its currency, and unless our legislators grapple with the problem at an early day and bring it to a wise and successful solution, we fear in the not very distant future there are serious times in store for all. The world's history records the disastrous effects of a debased currency and we hope and believe that the patriotism and wisdom of this great nation will rise above local prejudice, sectional interests and the visionary schemes of ambitious demagogues and will make the American dollar current in the markets of the world subject to no discount, and worth to all men what the stamp of this Government claims for it.

Chicago.

(By Telegraph.)

The Shelf Hardware trade has not yet opened up in full swing, but salesmen are

now out and in a very few days they will be heard from. The jobbing houses here have generally increased their force of traveling men, as intimated they would a few weeks since, and the interests of Chicago will be pushed more vigorously this year than ever before. The year's results showed a very handsome gain on any previous year, and jobbers are making a determined effort to surpass even that record.

St. Louis.

(By Telegraph.)

The first ten days of the year have been very satisfactory, both as regards volume of trade and prices. In the way of winter goods the demand has been exceedingly heavy. Skates are selling very freely and prices are slightly higher in consequence. Ice-Cutting Tools are also in urgent demand. Prices in nearly all lines are low, and jobbers anticipate a general hardening of values as soon as the spring trade makes itself felt. In Builders' Hardware, Wire Nails and Cut Nails, Barb Wire, &c., trade is dull at unchanged prices. Jobbers who carry stocks of Gas Heaters and Coal Stoves report a heavy trade in these lines. Taking everything into consideration, the outlook is very encouraging for a good spring trade.

Notes on Prices.

Cut Nails.—The Cut-Nail market continues quiet and in substantially the same condition as for the past few weeks. Eastern quotations are on a basis of \$1.40 for carload lots at mill on a 35-cent average. Prices in the West are slightly higher, and represented by \$1.42½ to \$1.45 for carloads at mill, 35-cent average. There is a disposition on the part of manufacturers to move conservatively and by a diminished production to avoid the accumulation of Nails and at the same time to adhere quite rigidly to the prevailing price, refusing to make concessions. For small lots from store in New York the regular quotation is \$1.75 to \$1.80. Carload lots on dock are held at \$1.60 to \$1.75, according to average.

Chicago, by Telegraph.—Cut Steel Nails are quiet but firm. Manufacturers continue to quote \$1.60, Chicago, on 30-cent average and small lots from stock sell at \$1.65 to \$1.70, depending on the average.

Wire Nails.—There has been no important change in the Wire Nail market since our last report. For carload lots at mill \$1.40 is the price, some manufacturers naming a slightly higher figure. There is a good deal of inquiry for Nails from the trade, and the aggregate of business since the opening of the year has been fair.

Chicago, by Telegraph.—Manufacturers report a better inquiry from large buyers than for some weeks and indications point

to an active trade in the near future. Sales are being made from stock at prices very close to manufacturers' quotations from factory, but manufacturers claim that this is done for special purposes and not because of the lowering of rates at works. Some go so far as to claim that prices will be higher rather than lower. Large lots are quoted at \$1.55, Chicago, from mill; carload lots are selling at \$1.60; small lots from stock are quoted \$1.65 to \$1.70.

Barb Wire.—During the past week the Barb Wire market has been sluggish, with only a limited amount of business. Prices are without material change on a basis of \$2.35 to \$2.40 for carload lots of Four-Point Galvanized at mill. Small lots from store in New York are still quoted at \$3.10 for Four-Point Galvanized, carload lots being held at \$3.

Chicago, by Telegraph.—While the outlook for spring business is good and manufacturers take a cheerful view of the situation because they have booked a good number of orders, the trade of the immediate week under review has not been large, and further buying may be deferred for a little time until some movement is made in the smaller jobbing and retail trade. Manufacturers' prices range from \$2.15 to \$2.25 on carload lots of Painted and \$2.55 to \$2.70 on Galvanized. Jobbers are not maintaining the full difference between their quotations and those of manufacturers, but sell small lots at \$2.25, Painted, and \$2.70, Galvanized, with 5 cents off for mixed carloads.

Winchester Rifles.—Winchester Repeating Arms Company, New Haven, Conn., and New York, have for some years been selling their goods to the trade generally at certain discounts, giving to some large houses a special rebate each six months on condition that their regular prices were maintained. Beginning with the present year, however, this contract system has been abandoned, partly owing to the fact that prices were not in all cases maintained in accordance with the understanding, and partly in view of the fact that the attempt to control selling prices is more or less interfered with by laws recently enacted in several of the States. For these reasons the rebate system heretofore followed has been given up.

Wringers.—The American Wringer Company, 99 Chambers street, New York, in connection with their 1893 catalogue, just issued, a separate notice of which is given elsewhere, announce the following new list, in which net prices are given on their line of Wringers, subject only to a discount of 2 per cent. for cash in ten days, the goods delivered f.o.b. factories or at warehouse in New York City:

Clothes Wringers.

	Per dozen.
Daisy, No. 2.....	\$16.00
" 3.....	30.00
" 4.....	24.00
Handy, No. 2.....	16.00
" 3.....	20.00
" 4.....	24.00
Magic, No. 2.....	21.00
" 3.....	25.00
" 4.....	29.00

The A. W. Co., No. 2.....	17.00	Welcome, No. 22.....	34.00
" " 3.....	21.00	" 33.....	43.00
" " 4.....	25.00	" 44.....	52.00
" " 5.....	34.00	Welcome, No. 20.....	25.00
" " 6.....	43.00	" 30.....	29.50
Sherman, No. 4.....	72.00	" 40.....	34.00
" 5.....	96.00	" 50.....	34.00
Household, No. 10.....	18.00	" 60.....	43.00
" 11.....	22.50	" 70.....	52.00
" 12.....	27.00	Welcome, No. E.....	34.00
Novelty, No. 10.....	21.00	" F.....	38.50
" 11.....	25.50	" G.....	43.00
" 12.....	30.00	" EE.....	43.00
" 20.....	30.00	" FF.....	52.00
" 30.....	39.00	" GG.....	61.00
" 40.....	48.00	Welcome, No. XA.....	42.00
" 50.....	66.00	" XB.....	46.50
Novelty, No. 2.....	21.00	" XC.....	51.00
" 3.....	25.50	" XAA.....	51.00
" 4.....	30.00	" XBB.....	60.00
" 22.....	30.00	" XCC.....	69.00
" 33.....	39.00	Conqueror, No. 2 1/2.....	25.00
" 44.....	48.00	" 1 1/2.....	34.00
Novelty, No. 2 1/2.....	21.00	Empire, No. 11 1/2.....	56.00
" 3 1/2.....	25.50	" 12 1/2.....	62.00
" 4 1/2.....	30.00	Empire, No. 3 (Bench W'gr).....	48.00
" 22 1/2.....	30.00	" 4.....	54.00
" 33 1/2.....	39.00	" 4 1/2.....	57.00
" 44 1/2.....	48.00	" 5.....	63.00
Welcome, No. 20.....	25.00	Household, No. A.....	36.00
" 30.....	29.50	" B.....	40.50
" 40.....	34.00	" C.....	45.00
Eureka, No. 2.....	19.00	Keystone, No. 10.....	21.00
" 3.....	23.00	" 16.....	25.50
" 4.....	27.00	" 18.....	30.00
" 5.....	36.00	" 20.....	39.00
" 6.....	45.00	" 22.....	39.00
Superior, No. 2.....	18.00	" 24.....	48.00
" 3.....	22.00	Royal Keystone, No. A.....	30.00
" 4.....	26.00	" B.....	36.00
" 5.....	35.00	" C.....	46.00
" 6.....	44.00	Keystone, No. 40.....	30.00
Superior, with pressure screws:		<i>Household and Hardware Specialties.</i>	
No. 2.....	20.00	Household Folding Wash Bench, per	
" 3.....	24.00	dozen.....	\$18.00
" 4.....	28.00	Union Washing Machine, each.....	12.00
" 5.....	37.00	Union Wringer.....	3.75
" 6.....	46.00	Doty's Improved Clothes Washer:	
Rival, No. 10.....	18.00	Family Size, each.....	8.00
" 11.....	22.50	Hotel Size, each.....	9.00
" 12.....	27.00	Extra Hotel Size, each.....	13.00
Volunteer, No. 10.....	20.00	Universal Mop Wringer, per dozen.....	9.00
" 11.....	24.50	" " " " with Galva-	
" 12.....	29.00	nized Iron Rolls, per dozen.....	12.00
Imperial, No. XX 2 1/2.....	20.00	Metropolitan Mangle, each.....	6.00
" XX 1 1/2.....	24.50	Domestic Mangle, each.....	11.00
" XX 1 1/4.....	29.00	Eclipse Mangle, each.....	25.00
Relief, No. 110.....	23.00	American Mangle, No. 3 each.....	35.00
" 111.....	27.50	" " 2.....	53.00
" 112.....	32.00	" " A.....	75.00
" 120.....	41.00	" " B.....	95.00
" 130.....	50.00	Reversible Clothes Horse, No. 1, per	
" 140.....	68.00	dozen.....	7.00
Excelsior, No. E.....	30.00	Reversible Clothes Horse, No. 2, per	
" F.....	34.50	dozen.....	8.00
" G.....	39.00	Reversible Clothes Horse, No. 3, per	
" EE.....	39.00	dozen.....	9.00
" FF.....	48.00	Reversible Clothes Horse, No. 4, per	
" GG.....	57.00	dozen.....	10.00
" H.....	92.00	Empire Drying Bars, per dozen.....	6.00
Excelsior, No. HH.....	117.00	Gem Clothes Dryer, ".....	2.50
" JJ.....	240.00	Adams' Lawn Swing, each.....	6.00
" KK.....	325.00	" Veranda Swing, each.....	4.50
Excelsior, No. XA.....	38.00	Household Mouse Trap, per dozen, \$1.00;	
" XB.....	42.50	per gross.....	10.00
" XC.....	47.00	Ideal Mouse Trap, per dozen, 90 cents;	
" XAA.....	47.00	per gross.....	9.00
" XBB.....	56.00	Grip Rat Trap, per dozen, \$1.10; per	
" XCC.....	65.00	gross.....	11.00
Universal, No. 2 1/2.....	21.00	Slayer Rat Trap, per dozen, 95 cents;	
" 2.....	24.50	per gross.....	9.50
" 1 1/2.....	25.50	Household Step Ladder, with Pail Shelf,	
" 1 1/4.....	30.00	per foot.....	12
" 1 1/2.....	30.00	Lovell's Improved Extension Ladder,	
Universal, No. 1.....	48.00	No. 10, each.....	3.25
" 14.....	66.00	Lovell's Improved Extension Ladder,	
Universal, No. A 2 1/2.....	30.00	No. 12, each.....	4.00
" B 1 1/2.....	39.00	Lovell's Improved Extension Ladder,	
" C 1.....	57.00	No. 14, each.....	4.75
" D 8.....	112.00	Lovell's Improved Extension Ladder,	
Universal, No. BX 1 1/2.....	42.00	No. 16, each.....	5.50
" CX 1.....	60.00	Lovell's Improved Extension Ladder,	
" DX 8.....	115.00	No. 18, each.....	7.00
Universal, No. 8.....	112.00	Lovell's Improved Extension Ladder,	
" 12.....	208.00	No. 20, each.....	8.00
" 18.....	254.00	Acme Lemon Squeezer, per dozen.....	15.00
" 22.....	336.00	Fifth Avenue Lemon Squeezer, per	
Universal, No. AA 2 1/2.....	38.00	dozen.....	7.50
" BB 1 1/2.....	47.00	Samson Cork Puller, per dozen.....	10.00
" CC 1.....	65.00	Screws for Cork Puller, per dozen.....	1.00
Empire, No. 3.....	32.00	The retail prices for Clothes Wringer	
" 4.....	38.00	Parts given on pages 52, 53, 54 and 55 of	
" 4 1/2.....	41.00	their catalogue are subject to a discount of	
" 5X.....	44.00	50 per cent.	
" 5.....	47.00		
" 14X.....	78.00		
Empire, No. 40.....	47.00		
" 50.....	53.00		
" 5A.....	92.00		
" 14A.....	117.00		
Empire No. 16X.....	106.00		
" 14.....	117.00		
" 16.....	172.00		
" 14P.....	153.00		
" 16P.....	208.00		

The retail prices for Clothes Wringer Parts given on pages 52, 53, 54 and 55 of their catalogue are subject to a discount of 50 per cent.

Anger Mortise Sash Pulleys.—Palmer Hardware Mfg. Company, Troy, N. Y.; Empire Portable Forge Company, Lansingburg, N. Y.; Stover Mfg. Com-

pany, Freeport, Ill., and Shepard Hardware Company, Buffalo, N. Y., make a joint announcement to the trade to the effect that until further notice quantity orders for Auger Mortise Sash Pulleys may be made up of the following: Common Sense, Empire, Ideal Nos. 2 and 4, Star and Acme.

Planes.—The following advanced prices on Planes were recently adopted by the manufacturers, subject to a discount of 2 per cent. for cash:

	Per cent.
Fancy Planes.....	40
First Quality Bench Planes.....	45
Second Quality Bench Planes.....	50

H. Chapin's Son.—Under date January 2 H. Chapin's Son, Pine Meadow, Conn., issues the following discount sheet applying to his catalogue of 1890; terms, 30 days or 2 per cent. discount for cash in ten days:

	Discount per cent.
Boxwood Rules.....	80&10
Ivory.....	50&10
Miscellaneous Rules.....	60&10
Bench Planes, Common "Pearce".....	60
" " Extra and Premium.....	55
" " with English Irons instead of American.....	30
Ship Planes.....	55
Miscellaneous Planes.....	50
Bench Planes, Apple, Box and Rosewood.....	30
Carriage Makers' Tools.....	30
Molding Planes.....	50
Grooving Plows.....	50
Gauges.....	60&10
Scholl's Patent.....	60&10
Marden's Patent, for Door Hangers.....	50&10
Plumbs and Levels—Non-Adjustable.....	75&10
Patent Adjustable.....	75&10
Pocket Levels.....	70&10
Level Glasses.....	70&10
Hand Screws.....	40&10
Turning Saw Frames.....	30&10
" " and Saws.....	30&10
Chisel Handles.....	65&10
File and Awl Handles.....	65&10
Plane Handles.....	40&10
Plane Handles.....	40&10
Saw Handles.....	40&10
Saw Handles.....	40&10
Door Stops, Birch only.....	60&10
Rubber Tipped, Birch only.....	60&10
Spoke Shaves, Chapin's Improved.....	50&10
Box Scrapers.....	50&10
Plane Irons.....	30&10
Plane Stops.....	20

Curry Combs.—In connection with their new catalogue, the American Curry Comb Company, Troy, N. Y., and 33 Chambers street, New York, are sending out to the larger trade net prices on their varied line of goods. They also announce that they will guarantee all purchases against any reduction in prices made by them and against prices made by any competitor, quality, style and finish being taken into consideration. This guarantee covers purchases made during the current six months.

Tacks.—Grand Crossing Tack Company, Grand Crossing, Ill., advise us that they are selling the following goods to the retail trade at the prices named, special discounts being given to larger buyers:

	Per box.
Bonnie Blue Tacks.....	\$2.00
Bill Nye Brads.....	4.00
Claw Handle Carpet Tacks (polished or blued).....	4.00
Claw-Handle Carpet Tacks (tinned or coppered).....	4.25

Cordage.—Within the past week or two there has been a further shrinkage in the price of Manila Rope and also in Sisal, New Zealand, however, remaining substantially without change. The market is

somewhat irregular in tone, owing to the active competition between the National Cordage Company and the outside manufacturers. The National Cordage Company in order to carry out their plans for controlling the market are negotiating with John Good and the Travers Bros. Company for the purchase of their Cordage plants, and are, it is understood, offering them large inducements. Thus far, however, nothing has been consummated. The company are also endeavoring to control the Hemp market, to further their plans in regard to a control of the manufactured product. Current prices are represented by the following quotations, which are shaded $\frac{1}{2}$ to $\frac{1}{4}$ cent per pound on large lots, terms f.o.b. New York or factory, $1\frac{1}{2}$ per cent. discount for cash:

	Per pound.
Manila, 7-16 in. diam. and larger.....	\$0.10
Manila, $\frac{3}{4}$ in.....	.10 $\frac{1}{2}$
Manila, $\frac{1}{2}$ and 5-16 in.....	.11
Manila, Tarred Rope.....	.09 $\frac{1}{2}$
Manila, Hay Rope.....	.09 $\frac{1}{2}$
Sisal, 7-16 inch and larger.....	.07 $\frac{1}{2}$
Sisal, $\frac{3}{4}$ in.....	.07 $\frac{1}{2}$
Sisal, $\frac{1}{2}$ and 5-16 in.....	.08 $\frac{1}{2}$
Sisal, Hay Rope.....	.07 $\frac{1}{2}$
Sisal, Tarred Rope.....	.06 $\frac{1}{2}$
Sisal, Medium Lath Yarn.....	.06 $\frac{1}{2}$
New Zealand, 7-16 in. and larger.....	.06 $\frac{1}{2}$
New Zealand, $\frac{3}{4}$ inch.....	.07
New Zealand, $\frac{1}{2}$ and 5 16 inch.....	.07 $\frac{1}{2}$
New Zealand, Hay Rope.....	.06 $\frac{1}{2}$
New Zealand, Tarred Rope.....	.06

Glass.—Reports from Pittsburgh indicate that the cold weather of the past week or more has not affected the orders for Glass to any great extent, as the demand remains steady. Since December 1, 1892, the number of pots in operation at American Glass factories has increased, owing to the completion of plants then in course of erection. The number of pots, or their equivalent in tanks, as given by a Pittsburgh paper devoted to the Glass interests, that are now in operation is 1715. There are 410 pots out of operation and 188 in course of erection. Prices of American and imported Glass are unchanged, though local demand is limited. It is understood that three New York firms who handle Plate Glass extensively in connection with their Sheet Glass business have consolidated this branch of their business, and thus expect to reduce expenses in handling Plate Glass. The new concern will be known as the Manhattan Plate Glass Company, with offices at 49-53 Lafayette place, and expect to be in working order by February 1. Quotations on Glass are as follows: American Window Glass, 1000-box lots or more, 80 and 15 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount. French Window Glass, 75 and 10 and 5 per cent. discount. American Plate ranges in price from 50 and 10 and $7\frac{1}{2}$ per cent. discount to 60 and $2\frac{1}{2}$ per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

THE FIRM of S. A. Wilde Mfg. Company, Taunton, Mass., manufacturers of Tinware, was dissolved on the 5th inst. by mutual consent. Samuel A. Wilde has retired from the firm and Randall Dean will continue the business under the name of the Dean Mfg. Company. Mr. Dean assumes the assets and liabilities of the old concern.

Weekly Prize Competitions.

\$25.00.

FOR MORE than six months Weekly Prize Competitions (\$10) have been an interesting and useful feature of the *Pharmaceutical Record*, a journal issued from this office and devoted to the interests of the drug trade. These weekly competitions have related to a variety of technical and business questions of interest to druggists, and have brought out a large amount of information of much service to the readers of that enterprising journal. In view of the success of this feature we have decided to announce a similar series of Weekly Prize Competitions on questions of interest to our readers, and invite a general participation on the part of the trade. As the object of these competitions is to obtain information which will be of practical service to our readers, and to discuss questions in which they are interested, we shall esteem it a special favor if any in the trade will suggest subjects for such competitions, which, if deemed suitable, we shall take pleasure in using.

In each competition there will be three prizes—a first prize of \$12.50, a second prize of \$7.50 and a third prize of \$5. The prizes will be awarded for the answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. These competitions are open to every one, and it is hoped that there will be a general response from business men. Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers to the different questions will be favorably regarded as meeting the purpose for which these competitions are announced. We shall have the privilege of publishing any or all of the contributions received.

Weekly Prize Competition No. 1.

SUBJECT:

How to Avoid the Accumulation of Dead Stock.

This competition is announced in view of the fact that there is a constant tendency toward the accumulation of unsalable goods in the store as a result of injudicious purchasing, neglect of pushing goods, or from the fact that the goods go out of fashion or become damaged, shopworn, &c. The object of the competition is to draw out suggestions as to how such accumulations of dead stock can be avoided and merchants saved the loss which is frequently suffered from the carrying of such unsalable stock. This competition obviously touches upon such points as the following:

To what extent is it desirable to purchase relatively large quantities of goods, in order to obtain low prices;

Whether it is advisable to purchase new goods, such as novelties, specialties, &c., for which no demand has as yet been established;

What methods may be adopted to push the sale of goods which are likely to become unsalable;

Whether it is advisable to sell season goods, such as Stoves, Skates, Refrigerators, &c., at reduced prices, rather than carry them over to the next season;

How to get rid of dead stock.

The following prizes will be awarded :

First prize	\$12.50
Second prize	7.50
Third prize	5.00

Replies are to be received not later than February 4, 1893. They should be addressed as follows :

DAVID WILLIAMS,

96-102 Reade street,

New York.

Weekly Prize Competition No. 1.

Another subject will be announced in our next issue.

The Hardware Club.

THE FOLLOWING is a list of recent accessions to the membership of the Hardware Club of New York:

R. W. CLEMONS,

Tarpon Springs, Fla.

HAMILTON DISTON,

Henry Diston & Sons, Philadelphia.

WILLIAM E. GARD,

Meriden Bronze Company, New York.

GEORGE KISSAM,

198 and 199 Times Building,

New York.

S. Y. L'HOMMEDIEU,

Columbia Rubber Works Company,

New York.

D. R. MORSE,

Howard & Morse, New York.

E. B. PIKE,

Pike Mfg. Company,

Pike Station, N. H.

Cutlery Exhibit.

J. A. HENCKELS, Solingen, Germany, manufacturers of Cutlery, have for some time been actively engaged in the preparation of their exhibit for the Columbian Exposition at Chicago, and we are told it is progressing satisfactorily. The fact that Mr. Radke, the imperial architect in charge of the buildings, village, &c., in process of erection by the German Empire, has also been commissioned to supervise the arrangements for a suitable setting for this exhibit would indicate the matter is in competent hands. The show cases to contain these goods have been built in Germany and photographed both complete and in detail. The exhibition pieces are nearly finished, and we are told some of them are regarded as among the handsomest ever brought out. There will be a Scissors, 5 feet long, which is probably as large as any ever made. It will have fancy bows, all finished by hand. The display will include samples of everything manufactured by this concern. Among the leading goods may be mentioned Pocket Cutlery, Razors, Carvers,

Cook and Kitchen Knives, Scissors, Shears, manicure and surgical goods, Cork Screws, &c. There will also be a line of fine Swords and Daggers.

The managing partner of this firm, who is also one of the Imperial Commission, made a trip to this country last summer for the purpose of arranging details satisfactorily. This house was founded in 1731, and their goods are known by the "Spider brand" and trade mark "The Twins." Graef & Schmidt, 29 Warren street, New York, are sole agents in this country.

Trout & Sackett.

TROUT & SACKETT are a new firm who have just opened a Hardware establishment at 228 Lake street and 18 and 20 Franklin street, Chicago. They will carry a stock of specialties, the product of manufacturers represented by them, as follows: Fayette R. Plumb, Hammers, Hatchets and Sledges; L. S. Starrett, Machinists' Tools; the Wire Goods Company, all kinds of Wire products; Standard Flint Paper Company, the Malin & Co., manufacturers of Spool Wire. The firm's operations will cover the territory comprised in the States of Indiana, Illinois, Iowa, Wisconsin, Minnesota and Michigan. Their arrangements are such that they will be able to fill orders at factory prices. The trade will doubtless find this a very convenient depot from which to order goods of the lines above described, as shipments will be made much more promptly than from the several factories. The store secured by the firm is exceptionally well located and adapted to their business. The main entrance is on Lake street, but an L extends to Franklin street in the rear of another store occupying the corner of Lake and Franklin. All goods are thus received and shipped on Franklin street, which is a wide street but not a prominent thoroughfare at that point. Capacious shelves and bins have been fitted in the warehouse for the systematic handling of stock. The members of the firm are Geo. W. Trout and Geo. W. Sackett, both young men, but with considerable experience in the Western Hardware trade.

Seventy-fifth Anniversary.

THE GILBERT & BENNETT MFG. COMPANY, whose factories are at Georgetown, Conn., and Chicago, Ill., will celebrate in 1893 the seventy-fifth year of the establishment of their original plant at Georgetown. The works were founded in 1818 by Benjamin Gilbert, who began the manufacture of Curled Hair and Hair Sieves, passing from that to Wire Cloth and next to larger-meshed work, which subsequently led to the production of Poultry Netting. The company were incorporated in 1874. A New York store was opened in 1852, and has been maintained since then down to the present time. A Chicago branch was established in 1885, and a factory was added in Chicago in 1887. The Chicago factory makes a specialty of Wire Goods, covering a great variety of articles, running from Kitchen Utensils to office conveniences and fancy articles. The concern has been highly successful, having been managed

with great enterprise from their inception, and to-day conduct a very extensive trade, with every prospect of continued vigorous growth. Edwin Gilbert, son of the founder, is president of the company to-day.

Supplee Hardware Company's Catalogue.

SIMULTANEOUSLY with the opening of the year 1893 the Supplee Hardware Company, Philadelphia, have issued a large and handsomely illustrated catalogue, which not only does credit to the firm, but is a further indication of the advancement in the jobbing Hardware trade in this country.

The size of the catalogue is 18½ x 11½ inches, weighs 16 pounds, contains 1452 pages, in addition to the index of 22 pages. It also contains 5582 illustrations, all of which show careful preparation, and some, especially the cutlery, may be looked upon as works of art.

The volume is substantially and handsomely bound with Russian leather back and corners and cloth sides, with heavy bevel edges, the firm name being stamped upon both the side and back in gold letters. The Russian leather back is round patent blank book or ledger style, allowing the book to lie flat when open at any page. The sheets are sewed through and through on heavy book bands, which are laced into heavy book boards. The round back is lined with sheepskin, thus making the volume strong and durable. The paper is of an excellent quality and the entire work shows a superiority of artistic excellence.

The front page shows the frontages of their buildings, on the double front upon Market street, which store runs through and forms an L shape, which connects with the frontage of 4 and 6 North Fifth street, the Fifth street frontage being the direct entrance to the offices and counting rooms.

The departments of the catalogue are classified as follows:

DEPARTMENT No. 1, Pages 1 to 582.

Locks, Latches and Builders' Hardware.

DEPARTMENT No. 2, Pages 583 to 888.

Mechanics' and Edge Tools, Bolts, Screws, Nails, Tacks, Brads, Wire, &c.

DEPARTMENT No. 3, Pages 889 to 1008.

Lawn Mowers, Steel Goods, Shovels, Spades, Chairs, Curry Combs, Brushes, &c.

DEPARTMENT No. 4, Pages 1009 to 1208.

Cutlery, Plated Ware and Sporting Goods.

DEPARTMENT No. 5, Pages 1209 to 1452.

House Furnishing and Miscellaneous Hardware.

The alphabetical index is comprehensively arranged, with bold heavy type headings, large letters over each column, and double indexed; as an illustration of the double index, persons may either refer to an article like Carriage Bolts under C, or Bolts, Carriage, under B, and so on throughout the entire list.

Under Department No. 1 the illustration of Branford Lock Works' goods embraces quite a line of bronze metal Locks, Knobs, Escutcheons, &c. This firm have been the Philadelphia agents for the Branford Lock Works for over 20 years.

The system of numbering and describ-

ing both these Locks and the Yale Locks should quite overcome any error on the part of persons ordering these goods.

Department No. 2 display of Fayette R. Plume's line of goods, together with the display of Axes, shows excellent illustrations and descriptions. Noticeable among these illustrations is the firm's copyright Axe, Red Chieftain.

Under Department No. 3 will be found the names, styles and description of the various Lawn Mowers with which the firm's name has always been identified, the Pennsylvania and Continental Lawn Mowers especially having a world-wide reputation.

Referring to Department No. 4, the firm have always made a great specialty of Pocket and Table Cutlery, as shown on pages 1009 to 1208. They carry a large stock of American, English and German manufacture. They import quite largely of George Wostenholm & Sons, are Eastern agents for the Walden Knife Company, and have a copyright brand on Pennsylvania Knife Company and Crown and Arrow brands. They are also exclusive agents in United States for B. Worth & Sons' Razors, Butcher Knives, Carvers, Steels, &c. The catalogue shows only the leading lines of these goods.

The catalogue is intended only for distribution to their customers, and those who are fortunate enough to secure one will find it quite valuable for reference, and especially convenient in making up orders.

It is safe to say the trade generally, outside of those who have had similar experience, cannot realize the work necessary to compile a catalogue of these dimensions. It means 18 months of intelligent and exhaustive labor, in addition to the amount of money expended in the effort.

Louisville Letter.

(From a Special Correspondent.)

THE HARDWARE TRADE of Louisville, Ky., has been for the past two or three weeks making preparation for a very large distributive business. Stock has been carefully taken, and all the traveling men are fresh and ready for the road again, after a forced rest at headquarters for a fortnight. They are now going out in all directions, but principally into the great South, that fast-growing field, which is reached by every large distributing house and either directly or indirectly by every manufacturer in the country. This large field of country would not be so traveled over and drummed if it were not such a dependent section for manufactured goods. The land that could raise in plenty every article of consumption becomes the great consumer of the surplus of other sections. Similarly, in the great industries of Lumber and Iron, they are deported from the South by the millions of tons and much is brought back again in shapes and utensils and machinery that the Southern people are not able to work it into. Truly the interstate commerce is great and feeds the railroads, which in turn help to build up a country. The general trade of Louisville has been remarkably heavy and healthy in tone and the Hardware portion of the whole has not been lacking in the general prosperity. True, in many lines, the tendency for the

past six months has been downward in prices, very much against speculation, which fact has probably compelled jobbers to be more distributive and less accumulative, there having been very few lines that would warrant purchases beyond legitimate needs.

In most all lines of leading goods, there has recently been weakness, such as Bar and Sheet Iron, Cut Nails, Wire Nails, Barb and plain Wire, Bolts, Rivets, &c. Bar Iron has been very steady all of the past year, and it was only through sympathy with the other lines that it has weakened; the demand has in no way slackened off. Several new factors are affecting the market here—viz.: The bar mills situated in the natural gas regions of Indiana, who get their fuel so cheap that they can afford to pay freight and ship South.

In the other leading lines the general desire of the mills to have light stocks on the winding up of the old year's business caused many cuts to be privately made, just to be publicly exposed. Steadier prices are now expected, and as the demand is assured for a tremendous amount of goods, surely the manufacturers should be a little conservative and permit the bright prospects to materialize.

Death of Richard E. Windsor.

ON SATURDAY afternoon, January 7, was witnessed the sad ending of a Hardwareman's career in the sudden death of Richard E. Windsor, for years with Walbridge & Co., Buffalo, N. Y., but since January 1, 1893, under engagement to represent the interests of Plumb, Burdick & Barnard, Buffalo, N. Y., in the Eastern States. Some weeks ago arrangements were made with W. L. C. Glenney, of G. I. Mix & Co., 82 Chambers street, for quarters in his office. Tuesday, the 3d inst., Ralph H. Plumb came to New York, and, in company with Mr. Windsor, made a tour of the trade for the purpose of properly introducing him. Later they went to Boston on a similar errand, separating there last Friday night, each going to his home. Saturday morning following, Mr. Windsor spent attending to correspondence, declining a courteous invitation to lunch from those in the office on the plea of indisposition. From time to time as he finished several letters he would put them in a lamp post box near by, and while on one of these journeys he was stricken in front of Charles J. Healy's place, at 106 Chambers street, with apoplexy, having in his hand a letter to his sister at Fredonia, N. Y.

He died almost instantly and before an ambulance from the Chambers street Hospital arrived. Mr. Windsor was about 55 years of age, weighing something over 200 pounds, and of a build somewhat predisposed to the disease from which he died.

Corbett, Failing & Robertson

THE JOBBING HOUSES of Corbett, Failing & Co. and Foster & Robertson, Portland, Ore., have consolidated their interests, and the two concerns have been incorporated under the style of Corbett, Failing & Robertson (incorporated). The announcement of this change, relating as it does to two establishments, one of

which is among the oldest and best known in the Northwest, while the other, though comparatively young in the field, has by enterprise and industry obtained an enviable position, will be observed with much interest by the trade, who will heartily wish the new house the fullest measure of success.

Commercial Travelers' Week at the Columbian Exposition.

THE WEEK, July 23 to 29, has been especially selected as commercial travelers' week at the approaching World's Fair in Chicago, and we understand that every traveling organization in the world has been invited to participate, some of them having already signified their acceptance of the invitation. The week will be devoted principally to meetings of the different councils, in their individual or collective capacity. On July 26, which is designated commercial travelers' day, a monster parade will take place, in which it is expected that from 50,000 to 200,000 commercial travelers will be in line. A meeting will be held in Chicago on January 14 which will be attended by delegates from the different traveling organizations in this country, which number between 30 and 40, the object of the meeting being the formation of a committee of arrangements to look after the interests and take the necessary steps to insure the success of the project briefly outlined above. Commercial travelers are some 300,000 strong in the United States, and it is confidently expected that the week set apart for their collective attendance at the fair will be one of the most notable in the history of the exposition.

American Wringer Co.

THE AMERICAN WRINGER COMPANY, 99 Chambers street, have issued a new catalogue and price list of 56 pages, containing the goods manufactured by them, including Clothes Wringers and household and Hardware specialties. Among the goods recently added to the line of Wringers are the Handy, Magic, Rival, Relief and Superior with pressure screws. The latter is new to the domestic trade, although having been exported by them. There are a number of Folding Wash Benches. A new one known as the Household is referred to by the company as capable of holding two Tubs and a Clothes Wringer. Any Wringer can be placed on the Standard, thus leaving the Tubs entirely free to be handled, obviating the necessity of constantly changing the Wringer from one Tub to the other. It is so constructed that when not in use it can be folded up with the Wringer attached and put away in a small space.

There is also a number of articles in addition to the Wringers, such as Washing Machines, Clothes Washers, Mop Wringers, Mangles, Clothes Horse, Clothes Drying Bars, Lawn Swing, Mouse and Rat Traps, Step and Extension Ladders, Lemon Squeezers and Cork Pullers. Attention is called by the company to the fact that the large plant for the manufacture of Rubber Rolls, having a capacity of 6000 rolls per day, that has been in course of erection during the past year, is now completed, and they are now making their own rolls. The company's prices are given elsewhere.

Important Auction Sale.

HAYDOCK & BISSELL, 12 Murray street and 15 Park place, New York, among the special notices in this issue, announce important trade sales on Tuesday, Wednesday and Thursday, January 17, 18 and 19. These sales are by order of the St. Louis Stamping Company, Lallance & Grosjean Mfg. Company and Bronson Supply Company, and comprise several thousand cases of Agate and Granite Ware and Blue and White Ware seconds, as well as several thousand pieces of Never-Break Steel Spiders, Tinned Stew Pans and Pots, Porcelain Stew Pans and Pots, first quality discarded patterns and seconds.

Trade Items.

LIVINGSTON LOW BAKER of the firm of Baker & Hamilton, San Francisco, and president of the Benicia Agricultural Works of Benicia, Cal., whose death was recently announced in *The Iron Age*, a sketch of his life being also given, was at one time president of the Society of California Pioneers, as well as president of the Chamber of Commerce of San Francisco and vice-president of the Pacific Home Mutual Life Insurance Company. At the time of his death he was chairman of the executive committee of the Merchants' Shipping Association, which has lately established a new line of clipper ships via Cape Horn. Mr. Baker was also vice-president of the Traffic Association of San Francisco, a member of the Loyal Legion and a director in several charitable, social and business organizations.

REYNOLDS & Co, New Haven, Conn., manufacturers of Screws and Bolts, have just completed an extensive addition to their plant, comprising two buildings 56 x 30 and 113 x 40 with three floors each. In one of the new buildings will be located the offices of the company and stock and shipping rooms; the remainder will be used for extending their manufacturing facilities.

ON THE EVENING of December 28, 1892, the Lozier Mfg. Company, Toledo, Ohio, gave a house warming to their employees upon the completion of the large new annex building to their already extensive works on Central avenue. The affair, while altogether informal, was well managed throughout, and proved enjoyable to all present. Music, speaking, dancing and supper constituted the programme of exercises for the evening. It is the intention of the company to make further additions to their present buildings and also to put up a one-story building, 120 x 50 feet, for enameling and stock rooms.

THE NORTHWESTERN TRAVELING MEN'S ASSOCIATION met in annual session at the Palmer House, Chicago, on December 28, 1892. President George J. Reed occupied the chair. After the address of the president the report of the secretary was read. It showed a disbursement of \$1,810,850 to beneficiaries since the foundation of the organization, while during the year just closed the sum of \$175,000 had been paid out in benefits to the relatives of deceased members. After the election of officers, in which the old officers were re-elected, President Reed received a surprise in the shape of a money present of \$500 as a mark of appreciation of his services.

WALDO G. BROWN, Houlton, Me., has disposed of his Hardware store, closing out his Light Shelf and Builders' Hardware, and removing his heavy Hardware, Bar Iron, Saws, Belting, Mill Supplies, Pumps, Wrought-Iron Pipe, Steam Fittings, &c.,

to warerooms at the Houlton foundry and machine shops, where his office will hereafter be located. Mr. Brown will continue his already established machine shop business, and also the manufacturing of Rotary Saw Mills, Shingle Machines, Gang Lath Machines, Wood-sawing Machines, Land Rollers, Spring tooth Harrows, Horse Hoes, Cultivators, Plows, Stoves, Mill, Implement and Machinery Castings, and will continue to carry in stock Heavy Hardware, Bar Iron, Steel, Belting, &c. Mr. Brown advises us that the largest plant of the kind in Eastern Maine, newly equipped with the latest improved machines for both wood and iron working, is nearing completion, and that orders for the season of 1893 are coming in with a gratifying outlook for a good year's business.

WE ARE ADVISED that the Rockford Bit Company of Kokomo, Ind., did not get their orders for 1892 entirely out of the way until December. And notwithstanding the fact that their output for the year was over 1,100,000, they were constantly behind on orders. The company attribute their good fortune in getting out such large quantities of Bits each month to the fact that they operate their factory nine hours per day, and pay their employees on a basis of ten hours' work. The hours of work being shorter, the workmen can, in consequence, show greater energy in getting out work. This is a gift to their employees of upward of 11,700 hours per year, or 1170 days of ten hours each. They claim their estimates as to quantity turned out has been fully realized thus far, and the work is far better and the result generally very satisfactory.

L. J. ZUCK, Hardware merchant, Erie, Pa., expects that on or before February 1 he will be located in a new block at 1601 Peach street, which has been built especially for his line of business. Mr. Zuck has admitted his brother, C. W. Zuck, as an equal partner in the firm, and the style will hereafter be the Zuck Hardware Company. They will carry a full line of Shelf Hardware, Mechanics' Tools, Wagon Woodwork, Iron and Nails and Agricultural Implements.

JOHN F. SCHABERG announces that having for the past eight years carried on the Hardware business on Gravois avenue and Victor street, St. Louis, he has removed to Jefferson avenue and Victor street, one block west of his old stand, where he will continue to keep a full line of Builders' and General Hardware, Cutlery, Pumps, Implements, Wooden Ware, &c.

AULD & CONGER, 100 Euclid avenue, Cleveland, Ohio, furnish us with a statement of production and shipments of Sea Green roofing slate for the past four years. This slate is handled by the Vermont Slate Company. The following table shows a very healthy growth in this industry:

	Production.	Shipments.
1889	\$138,662.45	\$115,339.86
1890	152,958.45	178,304.04
1891	189,698.57	187,356.54
1892	201,527.19	192,997.24

SPERRY & ALEXANDER have located themselves at 16 Warren street, New York, where they will job Cutlery, both foreign and domestic, and various Hardware specialties. W. M. Sperry was for 12 years with Wiebusch & Helger, then in a manufacturing business and for the last four years with Charles J. Healy. Mr. Alexander was connected with the Howard Cutlery Company and their predecessors for 17 years, having traveled South for them, while Mr. Sperry's territory was in the West principally.

MCGUIRE LAWN MOWER COMPANY, late Dille & McGuire Mfg. Company, Richmond, Ind., for whom the S. A. Haines Company are selling agents, are exceptionally busy and full of orders, so much

so we are advised that they are declining new business.

BURN STAMPING & MFG. COMPANY, 66 State street, Chicago, issue a catalogue relating to dairy supplies and other specialties. Their aim is to supply everything in the line of milk cans and articles used in the dairy. Illustrations are given in their catalogue of a variety of patterns of steel-clad milk cans, dairy pails, dippers, measures, strainers, ash cans, oily waste cans, &c. Their factory, just completed, at Chicago Ridge, 103d street, is 50 x 200 feet, four stories high. The tinning and galvanizing houses are separate from the main building. They have their own gas plant and use fuel oil. The Messrs. Burn of the firm were, up to a few months since, connected with the Buhl Stamping Company, Detroit.

IN THE SPECIAL NOTICES in this issue is one signed "Modern Stamped Ware Specialties," in which a manufacturer of specialties makes known his desire to enter into a contract for his entire output and exclusive sale with one or more responsible jobbing houses, the goods in question being referred to as A1 and well introduced.

LOGAN GREGG & Co., the well-known Hardware merchants of Pittsburgh, gave their annual banquet to their employees on Friday evening, the 6th inst., at Cyclorama Hall, in Allegheny, Pa. A remarkable feature in connection with this banquet is the fact that it was the sixty-second annual assembly of the employees of this old-established firm.

THE COPARTNERSHIP heretofore existing under the style of Graham, Emlen & Passmore, Philadelphia, was dissolved on the 2d inst. by limitation. Samuel Emlen has withdrawn from the firm. John H. Graham and Everett G. Passmore have formed a new copartnership under the firm name of Graham, Passmore & Co. It is stated that John W. Graham and Walter E. Graham will have an interest in the profits of the business.

UNITED STATES TACK & NAIL COMPANY, Globe Purchasing Agency, Bedford Building, Boston, Mass., issue a circular in which they announce that they are now in operation and are prepared to furnish first quality goods, including Upholster, Gimp, Carpet and Shoe Tacks, as well as Shoe Nails of every description. They state that as an expression of good faith they give with each bill of goods a guarantee against defects in goods caused by inferior workmanship or material. It is also stated that they are outside of any trust or compact governing prices, material or output. Aside from their business of manufacturing they make a specialty of building Tack and Nail plants, and furnishing machinery of most improved pattern. They are also furnishing machinery for manufacturing Steel Shanks.

MARYLAND BOLT & NUT COMPANY, Baltimore, Md., issue a circular under date, 2d inst., in which they announce that they have secured the warehouse, 7 East Lombard street, where they will carry in stock a large and complete assortment of all the goods they manufacture, comprising Machine Bolts, Bolt Ends, Carriage, Tire and Stove Bolts, Gimlet Point Coach Screws, Plow Bolts, Nuts and Washers, &c.

IT IS ANNOUNCED that the firm of Kegler, Weinschenk & Ahlers, Bellevue, Iowa, have been dissolved by mutual consent. Messrs. Kegler and Weinschenk will hereafter conduct the Agricultural Implement business, while Messrs. Kegler, Weinschenk and Ahlers, under the style of the Bellevue Pump Company, will continue the business of manufacturing Kegler's

Patent Chain Pump Curb and Tubing. The Bellevue Pump Company advise us that they are moving into new quarters and enlarging their manufacturing facilities, so as to be in a position to meet the increased demand for their goods.

JAMES H. GOLDEY, as treasurer of the Hardware Board of Trade, 4 and 6 Warren street, New York, issues a circular in which it is stated that the business offices of the board have been enlarged and refurnished completely and additional facilities secured to insure celerity and accuracy in business transactions. Patrons and friends and the trade generally are invited to make a friendly call at their convenience.

JOHN D. SAWYER & Co., who have been conducting a Hardware and Mill Supply business at Pawtucket, R. I., have been organized as a stock company, with a capital of \$50,000. They have built a large addition in the rear of their establishment and will hereafter do business in a store 70 x 75 feet. We are advised that the new store will be especially well arranged and adapted to the requirements of their trade.

THE READING HARDWARE COMPANY find their business growing so rapidly that they have found it necessary to make still further additions to their very extensive plant in Reading, Pa. Two new Corliss engines have recently been put in, and, besides enlarging their Brass foundry one-third, they are adding a new five-story building 105 x 45 to one of their other departments. Their Reading pay roll includes over 1100 names.

A HANDSOMELY ILLUSTRATED VOLUME of 281 pages devoted to the industries and wealth of the principal points in Rhode Island gives views of business streets and public buildings in Providence, together with the history of the settlement and growth of the State and this city. The larger portion of the work, however, is devoted to the manufacturing interests of the State, first among which is mentioned the Rhode Island Perkins Horseshoe Company and the following facts given: The company were incorporated in 1867 and have a capital stock of \$2,750,000. The officers are as follows: F. W. Carpenter, president; C. H. Perkins, general manager; R. W. Comstock, secretary, and C. R. Stark, treasurer. The plant covers an area of 6 acres, and the productive capacity of the works is 60 tons of manufactured goods per day. They manufacture their own iron and give employment, in the various departments of their business, to 500 hands. The styles of shoes made include the Perkins Toe Weight Shoe, in three different weights; the Goodenough Shoes; Perkins Snowshoe; Perkins Cowboy Shoes; X. L. Steel Shoes, &c., while a specialty is made of the Perkins Side-weight Hind Shoe, their latest production.

THE WAREHOUSE of the Penn Hardware Company, Reading, Pa., was destroyed by fire on the 5th inst. The loss is estimated at \$50,000, fully covered by insurance.

THE TEA TRAY COMPANY, Newark, N. J., established a quarter of a century ago and incorporated in May, 1892, manufacture at their plant, 156 and 158 Summit street, a full line of Hotel, Children's and Tea Trays, also Japanned Ware, Shades for electrical purposes, Metal specialties, &c., Hoods and Reflectors, Horns, Typewriting Covers, and other articles of any shape or size are made to order from drawings. The various processes in the manufacture of perfect Trays have each its fully equipped department in the factory. The company have their own tool shop, where they make their own Dies, some of which weigh over half a ton. The details of the large establishment are under the personal super-

vision of either the president or treasurer, thus insuring goods of uniform standard and promptness in executing orders.

TATE & Co., Malden, Mass., manufacturers of Spool Wire, Picture Wire, Sash Cord, &c., are now occupying their new plant, which affords them largely increased facilities for manufacturing and more convenient counting-room space.

THE UNION CYCLE MFG. COMPANY, Boston, Mass., are sending with their compliments a substantial leather bill wrap for carrying paper currency. In this connection they remark that a healthy and well developed bill wrap makes a man feel at peace with all the world in these hard times, and extend the wish that the recipient may keep the wrap in a state of happy corpulency.

ATLAS TACK CORPORATION, Boston, in answer to the unexpectedly large number of inquiries regarding their household and counter display, state, in a circular letter to the trade, that it would be imprudent for them to divulge description or name previously, or to undertake to execute orders before February 1, as stated in their circular letter December 19, 1892. The corporation will also put out a companion package containing assortments of Nails for household use, for which they will be prepared to execute orders by February 10.

THE HABERMAN MFG. COMPANY and their auctioneer, Julius E. Mosheim, through their attorneys, recently made a strong effort before Judge Cox in the United States Circuit Court for the Southern District of New York to have him suspend the injunction granted the Lalanc & Grosjean Mfg. Company restraining the Haberman Mfg. Company, their agents, &c., from dealing directly or indirectly in Enameled Ware infringing on the Kegreiz patent. The ground taken by the judge was that the complainants were the owners of a valid patent, and the motion was denied, the court ordering a permanent injunction to issue.

UNDER DATE of January 9, Lalanc & Grosjean Mfg. Company advise the trade that they have acquired all patents relating to the manufacture of the ware known as Onyx, including the process of making Onyx Ware, and the trade-mark Onyx as applied to such goods.

Price-Lists, Circulars, &c.

TOWER & LYON, 95 Chambers street, New York: Tower's Police Equipments. The goods shown in their recent catalogue include Patent Adjustable Handcuffs and Leg-Irons, Nippers, Twist-ers, Clubs, Belts, Shields, Badges, Caps, Helmets, Buttons, Wreaths, Lanterns, Locks, Police Rubber Goods, Revolvers, Rubber Pocket Pistol Cases, Government Brass Padlocks, Scandinavian Jail Locks, and Humane Restraint Implements for the insane and for criminal institutions. This catalogue marks 27 years of uninterrupted business for this firm in the manufacture and sale of Equipments for police and criminal officers.

J. BARDSLEY, 149-151 Baxter street, New York: Checking Spring Hinges, Door Springs and Checks, Wood Door Knobs, Door Stops, &c. These goods are illustrated in their catalogue, with prices. The line of Wood Knobs is extensive, and the name Bardsley is now stamped upon the shank of every Knob, except those of class B, which merely have the letter B stamped upon them.

THE HARRY SVENSGAARD BICYCLE COMPANY, Fergus Falls, Minn.: Bicycles. This firm send a postal card of wood, upon which they call attention to the line of wheels they are handling for '93 and

designate the cities in the Northwest where they have branch houses.

SIMMONS HARDWARE COMPANY, St. Louis, Mo.: 1893 annual catalogue, No. 217. Boys' Wagons, Bicycles, Velocipedes, Tricycles, Lawn Mowers, Gasoline Stoves and Trimmings, Ice Cream Freezers, Siberia Refrigerators, Baby Carriages, &c. The catalogue contains 132 pages, fully illustrated, with prices.

THE GRAND RAPIDS REFRIGERATOR COMPANY, Grand Rapids, Mich.: Circular calling attention to new styles of Refrigerators for 1893. The manufacturers say: "The old style spindle carving of flowers and leaves has given way to conventional designs cut in the solid wood. The iron hinges with false hinge plates have given place to the solid ornamental bronze hinges applied to the surface. The zinc on the doors and lids is now turned over the edges, and the nails concealed by a neat molding. We furnish these Refrigerators with our solid iron ice rack and the extra blanket of wool felt around the inside box in addition to the charcoal filling, our air-tight locks and solid iron shelves. It is evident that such Refrigerators cannot be the cheapest in the world, yet owing to our increased capacity we are able to make liberal reductions in the list prices."

HOWARTH REVERSIBLE SASH & SASH CENTER COMPANY, Detroit, Mich.: Sash and Sash Centers. These are adapted for use in factories, warehouses, &c., for inside and outside transoms, for windows hung top and bottom, and for residences, &c. The manufacturers state that by the use of these Sash and Centers, box frames, weights, cords, pulleys, spring balances, parting strips, inside and outside stops are dispensed with. A number of illustrations show buildings on which these devices are in use.

SEEDER AND CHAIR HAMMOCK COMPANY, Homer, Mich.: Pamphlet illustrating the Baldwin Chair Hammock and Swing and the Michigan Wheelbarrow Seeder, for sowing clover, flax and grass seed. The different styles in which the Hammock is offered are shown, attention being called to the capacity and strength of the Hammock. It is stated that the Wheelbarrow Seeder has been on the market for about 20 years and that valuable improvements have been added during the past few years, the implement as now offered being referred to as especially well adapted to its purpose. A circular is also issued relating to the Michigan Wheelbarrow Grass Seeder, the special features and advantages of which are pointed out.

S. L. ALLEN & Co., Philadelphia, Pa.: Flexible Flyer Coasters. These were invented to secure ease of steering and with it increased speed. A steering bar, operated by the hands or feet, is provided, by the turning of which the runners are curved to right or left at will, thus guiding the sled perfectly. The makers remark that this method of steering saves shoe leather by the ton.

WILLIAM H. VAN BENTHUYSEN & Co., 36 Gold street, New York: Sole Leather Washers and Whip Sockets, Carriage Hardware, &c. The catalogue covers Anti-Rattlers, Carriage Knobs, Lining Nails, Tacks, Shaft Tips, Loops and Buckles, Dash Rails, Shaft Couplings, Wrought-Iron Steps, Axle Clips, Fifth Wheels, King Bolts, and a general line of Carriage Trimmings.

HULBERT BROS. & Co., New York: Majestic Wrench. This instrument, designed for Bicycle use, is full drop forged from choicest bar steel. It is 5 inches in length, but it is stated, through its construction, which is due to skillful forging, it is as light as the ordinary form of 4-inch Wrenches. The manufacturers guarantee the Wrench to withstand any reasonable test without spreading the jaws or causing breakage.

PRIZE COMPETITIONS.

WE HEREBY ANNOUNCE a series of six prize competitions relating to trade matters in which our readers are interested. Four prizes of \$50, \$25, \$15 and \$10 will be awarded in each competition.

The competitions are open to all and a general participation on the part of the trade is invited.

We shall have the privilege of publishing any or all of the contributions received.

The committee of award in assigning prizes will take into account the merit of the different contributions and their suitability for publication.

PRIZE COMPETITION No. 6.

How Retailers Can Best Advertise and Extend Their Business.

The object of this competition is to obtain practical suggestions as to the methods which the retail dealer in Hardware, Stoves, Tinware, &c., can advantageously adopt in building up his business, and is intended to cover such points as the following:

- Advertising in the local papers, with suggestions as to how such advertising should be done and to what extent;
- The manner in which circulars and other printed matter may be used;
- A description of any special or unusual methods of attracting and holding trade; and
- General suggestions in regard to ways in which the business can be extended.

An account of any methods which have been found useful in building up trade will be suitable under this competition.

First Prize.....	\$50.00
Second Prize.....	25.00
Third Prize.....	15.00
Fourth Prize.....	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96-102 Reade street, New York, and marked Prize Competition No. 6.

PRIZE COMPETITION No. 7.

Travelers' Yarns.

The traveling salesman is proverbially happy in the stories which he narrates, and this competition is for the purpose of calling out a collection of good yarns for publication. While the attention of travelers is specially invited to this competition, it is open to all. Stories relating more or less closely to trade or business matters will be preferred.

First Prize.....	\$50.00
Second Prize.....	25.00
Third Prize.....	15.00
Fourth Prize.....	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96-102 Reade street, New York, and marked Prize Competition No. 7.

PRIZE COMPETITION No. 8.

How to Treat Clerks.

Under this competition, beside a general discussion of the subject, such questions as the following may be considered:

- The extent to which clerks should be given an opportunity of obtaining a knowledge of the business, and of price-lists, prices, &c.;
- Whether it is desirable to have formal rules for the regulation of employees and for the management of the store. If so, a set of rules should be submitted;
- To what extent clerks should be held responsible for their mistakes;
- Suggestions as to how clerks should be treated in order to secure their most intelligent and efficient work;
- Mistakes made in the treatment of clerks.

This competition opens an important subject and it is hoped that it will be discussed fully by merchants and by their clerks from their different points of view.

First Prize.....	\$50.00
Second Prize.....	25.00
Third Prize.....	15.00
Fourth Prize.....	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96-102 Reade street, New York, and marked Prize Competition No. 8.

PRIZE COMPETITION No. 9.

Shop System of Keeping Track of Jobs.

This competition is intended to call out information in regard to methods of keeping account of the cost of labor and material on tin-shop work, repairing and new work, inside and outside. In connection with the general subject such points as the following may be touched upon:

- Whether blanks or forms are used in connection with such work. (If so, samples should be submitted);
- What record is kept of orders, costs of jobs, charges, &c.;
- How time occupied in going to and from the job is covered;
- Suggestions in regard to the profitable conduct of the shop.

To illustrate the system it is desirable that a specific job (as for example, repairing down spouting and eave trough, or other job of repairing in which new material is used) be referred to and the method of keeping track of the costs in such job fully explained.

First Prize.....	\$50.00
Second Prize.....	25.00
Third Prize.....	15.00
Fourth Prize.....	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96-102 Reade street, New York, and marked Prize Competition No. 9.

PRIZE COMPETITION No. 10.

Business Maxims—At Least 10.

Those entering this competition will send at least ten maxims relating to the conduct of business, presenting in a brief and pithy manner practical suggestions which may advantageously be followed.

First Prize.....	\$50.00
Second Prize.....	25.00
Third Prize.....	15.00
Fourth Prize.....	10.00

This competition will be open until the close of business February 18, 1893.

Contributions should be addressed to David Williams, 96-102 Reade street, New York, and marked Prize Competition No. 10.

PRIZE COMPETITION No. 11.

How Small Retailers May Keep a Record of Prices.

The object of this competition is to call out information or suggestions in regard to the best methods to be adopted in keeping a record of prices, showing cost or selling prices, or both cost and selling prices, of Hardware, Stoves, Tinware, &c., in a small retail store employing not more than four persons in the selling and bookkeeping departments, including the proprietors. Those entering the competition are expected to give a concise and clear explanation of their system, and if a price book is used, to submit as illustrating the system at least three specimen pages. If a price book is referred to it may be of any design or arrangement best adapted to the purpose, and may be original with the contributor or may be one of the different price books on the market. Fictitious names should be used instead of the real names of jobbers and manufacturers.

The committee in awarding prizes will take into account the merit of the different systems described, the character of the descriptions given, and the general utility and interest of the contribution.

First Prize.....	\$50.00
Second Prize.....	25.00
Third Prize.....	15.00
Fourth Prize.....	10.00

This competition will be open until the close of business, February 18, 1893.

Contributions should be addressed to David Williams, 96-102 Reade street, New York, and marked Prize Competition No. 11.

Aluminum Goods.

SCOVILL MFG. COMPANY, 210 Lake street, Chicago, issue a catalogue of Aluminum fancy goods. This is a 12-page pamphlet, in a neat cover, devoted to illustrations of fancy goods which the company are now manufacturing of Aluminum. They comprise Vases for holding Toothpicks, Matches, &c., Napkin Rings, Bon-bon Boxes, Drinking Cups, Envelope Openers, Panels for holding Thermometers, Photograph Frames, Mirror Frames, Smokers' Sets, Card Trays, &c. The workmanship on these fancy articles is of the highest order of artistic merit, and demonstrates the capabilities of Aluminum for ornamental treatment, rivaling the precious metals in appearance and superb finish.

Calendars.

TUCKER & DORSEY MFG. COMPANY, Indianapolis, Ind., send a view of the cataract at Spencer, Ind., below which are enumerated the goods manufactured by them. Attached to the card are calendar sheets for 1893. The goods are the company's well-known line of Alarm Tills, Stove Trucks, Kraut Cutters, Step Ladders, Saw Bucks, Towel Rollers, Lemon Squeezers, Furniture Casters, &c.

TOWER & LYON, 95 Chambers street, bring their Police Goods, Equipments for Criminal Officers, Prisons, &c., to notice on their 1893 calendar. It is so arranged that the entire sheet is torn off each month, bringing to view different sets of illustrations on each successive sheet.

THE NUBIAN IRON ENAMEL COMPANY, Cragin, Ill., send a calendar of their first quarter of 1893's stock of Squibs on Black Art. They do not claim the Squibs to be a collection of literary gems, but state that they are willing to sink their naturally poetic, literary and æsthetic temperament in the cause of Nubian, if by their imitation of wit and wisdom they can impress consumers with the good qualities of their Nubian Iron Enamels.

WYETH HARDWARE & MANUFACTURING COMPANY, St. Joseph, Missouri, have prepared a very pretty calendar for the present year, presenting a reproduction in half tone of "The Crossing Place," by R. Halfnight, in addition to leaflets for the months. The extent of the operations of this company is shown by the statement that their Wholesale Hardware and office building comprises 105 to 121 South Third street, their Tin, Stamped and Japanned Ware factory from 609 to 621 North Second street, and their Harness, Saddle and Collar factory from 302 to 308 North Second street.

WM. STAIR'S SON & MORROW, Halifax, N. S., call attention to their line of Heavy and Shelf Hardware, and also to the manufacturers for whom they are agents on a metal end hanger, to the lower part of which are attached calendar sheets for 1893. The sheets are large, with large date figures, underneath which are mentioned special lines of goods, these being varied for the different months.

C. F. BALLARD, Washington C. H., Ohio, sends with his compliments a convenient pointer calendar for 1893, similar to that of '92, of which 2500 were distributed. C. F. Ballard is the successor to White & Ballard and continues the business of General Hardware and Farming Implements at the same location on South Main street.

THE EMERSON & FISHER COMPANY, wholesale Carriage builders, Cincinnati, Ohio, send a metallic end hanger with date sheets attached near the bottom. Above is a large female head in colors,

the whole making an attractive addition for office or store.

WATERBURY BRASS COMPANY, 296 Broadway, New York, and Waterbury, have calendar sheets for 1893 attached to a handsome picture of Sunset at Capri. Underneath the picture is a list of goods manufactured by the company. The date sheets are attached by colored cords and the figures are large and distinct.

THE HOYER & BOEBINGER HARDWARE COMPANY, 59 East Pearl street, Cincinnati, Ohio, present, with their compliments, their 1893 calendar, in sheets of tinted paper, backed by a bronze and black card. Accompanying the calendar is a letter to the trade embodying a list of new lines of goods which have been added to their stock.

UNION DRAWN STEEL COMPANY, Beaver Falls, Pa., and **C. R. Talbott Company**, Cincinnati, Ohio, send a very neat calendar for 1893, 4 x 5 inches in size. The card is of celluloid, in imitation of ivory, on which is a handsome design, and mention of high grade Cold Die Rolled Steel and Iron Shafting, Pump Rods, Piston Rods and Steel Car Axles manufactured by them. Small calendar sheets are attached to the card, the latter being provided with a colored cord for suspending it.

KILMER MFG. COMPANY, Newburg, N. Y., present, with the compliments of the season, their seventh annual calendar. The hanger is in colors, with a view of their works, surrounded by the pictures of the members of the company. At the top of the card are illustrations of the Arrow and Adjustable Bale Ties, under which are the words, "The Ties that Bind." In addition to Bale Ties, the company manufacture Barb Wire, Coiled Baling Wire, Annealed and Galvanized Wire, Ornamental Fencing Staples, Wire Rods, &c. Calendar sheets are attached to the hanger near the bottom.

SHULTZ BELTING COMPANY, St. Louis, Mo., are sending out metal end hangers, with calendar sheets attached. A side of leather is represented as tacked to a board, on which is shown in colors their trademark and a list of goods manufactured by them. Their Belting is claimed as superior, being tanned on the surface only, the interior being rawhide.

VAUGHAN & BUSHNELL MFG. COMPANY, Chicago, issue a very handsome wall calendar for 1893, having a heavy cardboard back to which are attached large leaflets for each month. Alternating with these leaflets are views of the World's Columbian Exposition. The company are manufacturers of a considerable line of Hardware specialties and Tools.

Bicycles.

FOURTH ARTICLE.

THE TOLEDO BICYCLE COMPANY, 284 Cherry street, Toledo, Ohio, are putting a line of Dauntless wheels on the market for 1893, which they refer to as having reached the highest state of mechanical perfection, and which combine every essential feature that characterizes high-grade Bicycles. The Dauntless Racer is a single frame machine, with 28-inch front and rear wheels, and 48-inch wheel base, weighing 24 pounds. The Dauntless Scorchers is single framed, with 28-inch front and rear wheels, 10½-inch head, 45-inch wheel base, and weighs 33 pounds. The Dauntless Roadster, 1893 model, has a Dauntless double frame, 30-inch front wheel, 28-inch rear wheel, or both wheels 28 inches. The wheel base is 45 inches, and the machine

weighs 36 pounds. The Dauntless Ladies' Bicycle is built with a frame having two essential differences. The drop part of the frame is constructed of three parallel tubes, gracefully bent and alignment perfect. The second feature is in the saddle setting well over the rear wheel, thus giving ample room for mounting and dismounting and keeping the rider in an upright position and allowing the lady's dress to hang perfectly straight, giving style and grace to the rider. The company market their machines through first-class agents, and state that they are well equipped to deal with such in a manner that will be satisfactory.

THE QUADRANT CYCLE COMPANY, 249 Columbus avenue, Boston, their American branch, are making for '93 the No. 17 Quadrant safety, socket steering, socket stayed; hollow weldless steel forks; suspension spring seat, weldless steel tube; best material and finish throughout. No. 18, Quadrant ladies' safety, differs from No. 17 only in the shape of the frame. It is provided with an efficient dress guard. No. 20 Safety is designed and made to suit the requirements of those wanting a strong, serviceable roadster at a moderate price, and the No. 21 Quadrant spring frame safety, socket ball steering, with powerful spoon-brake to back wheel. The makers remark that with this wheel the rider is protected at all points—hands, feet and body—from vibration, jolts, shocks, rebounds, jumps, &c. The No. 22 Quadrant, diamond frame, is made for those riders who prefer this type. They also make a No. 23 Quadrant Racer, fitted with tires to order. In regard to weight the makers' rule is put no weight that is useless, yet to give the rider the strength suitable to his case.

THE HARRY SVENSGAARD BICYCLE COMPANY, Fergus Falls, Minn., will handle the Cleveland, made at Toledo, Ohio, and the Sylph, from Rouse, Hazard & Co., Peoria, Ill., as their special wheels. The Lion will be their medium-grade wheel. They will also handle extensively the Western Wheel Works' wheels. Their method of distributing their machines is through agents in all the cities in their territory. Most of their business is done in Minnesota, North and South Dakota, Montana and a part of Wisconsin. This territory is divided among their agents, each one having his own part.

THE HAMMOND & COOLEY MFG. COMPANY, Batavia, N. Y., make the Batavia Roadster, weighing, according to the tire used, about 30 pounds; and the Batavia Racer, weighing 20 pounds. They manufacture the Batavia rat-trap Pedal, warranted unbreakable, weighing 8 ounces; also an improved dust-proof Pedal, for which they are receiving large orders from manufacturers.

THE WHITTEN-GODDING CYCLE COMPANY, 118-124 South Main street, Providence, R. I., manufacture wheels to order only. They also make a specialty of supplying forgings and fittings to small manufacturers. The goods handled are those of Thomas Smith & Sons, Birmingham, England, Cycle and

Fitting manufacturers, for whom the Whitten-Godding Cycle Company are special agents for the United States. They hold a large, well assorted and complete stock of Stampings for solid, cushion and pneumatic tired safeties, both rough and finished, seamless tubing, safety frames, chains, brackets, lamps, bells, cement, &c. They have negotiated for the sole and exclusive control of the United States patent for the Saladee Saddle, and will manufacture these saddles as a leading specialty.

THE S. A. HAINES COMPANY, Second and Alabama streets, Indianapolis, Ind., call attention to the Winner safety, a high-grade machine with Humber diamond frame, weldless steel tubing with drop forgings throughout, steel bearings, Morgan & Wright pneumatic tire, easily detached cranks; weight, all on, 40 pounds.

THE PEERLESS MFG. COMPANY, Cleveland, Ohio, manufacture but one machine, the Triangle. It is referred to as a high-grade pneumatic, built upon strictly scientific lines, by which the strains on the different members are equalized and great strength secured, combined with beauty, symmetry and simplicity. The design of the frame is the principal feature of the wheel, the rear portion of which, from the saddle post down, is an equilateral triangle. To test this thoroughly a line is drawn from the rear axle through the center of the upright post, between the saddle and the sprocket wheel, and continued on from that point. In the Triangle this line passes at the head an equal distance from both the upper and lower bars, thus throwing upon each an equal portion of the work. These Bicycles are marketed through agencies in the different towns.

GEO. N. PIERCE & Co., Buffalo, N. Y., consider their wheels for 1893 very far in advance of their 1892 make. They use only the finest of tubing, steel, forgings, and the same grade of tires as the makers of high-grade wheels use. They guarantee each and every wheel, and their aim is to make the best medium priced wheel in the market. Their line of safeties comprise the new Queen City, diamond frame, full ball bearings, with Morgan & Wright pneumatic tires or New York Belting & Packing Company's protection strip; Queen City, diamond frame, full ball bearings; Convertible Queen City, for ladies and misses, ball bearings throughout; New 26-inch Queen City, full ball bearings, including head and pedals; Convertible Queen City, 26-inch wheels, ball bearings; Queen City 26-inch Convertible, and a 20-inch Queen City ladies' machine. In addition to these a line of Queen Tricycles are made by this company. They give certain territory to their customers, and refer all inquiries for that territory to them. A. M. Scheffey, 93 Reade street, New York, is their Eastern agent.

ROCHESTER CYCLE MFG. COMPANY, Rochester, N. Y., plan for the coming season, not how many Bicycles they can construct, but of how good a quality they can produce about 2000 wheels. The 1893 Rochester Scorchers has a double diamond weldless steel tube frame; 28-inch wheels,

especially made 1 1/2 inch pneumatic tires; adjustable handle bar 25 inches wide, of 3/4-inch weldless steel tubing, tapered at both ends to 1/2 inch, fitted with cork handles; Rochester rat trap ball bearing pedals; 43-inch wheel base and geared to 60 inches unless otherwise ordered. Weight with racing tires 31 pounds; with road tire 33 pounds. The 1893 Rochester Roadster is a double-tube diamond-framed machine; 30-inch wheels, reinforced rims; wheel base 45 inches; weight all on, 39 pounds, stripped 34 pounds. The 1893 Rochester Racer, double diamond frame; 28-inch wheels, double ball bearing crank axle; 1 1/2-inch specially made pneumatic tires; wheel base 45 inches, weight 25 pounds. The 1892 Rochesters Nos. 1, 2 and 3 were a success last year, and will be manufactured for 1893. Although slightly heavier than their new 1893 machines, they are referred to as marvels of strength. The company market their goods through agents; in some sections of the country wholesale representatives place sub-agencies in the smaller towns.

MONARCH CYCLE COMPANY, 42-52 N. Halsted street, Chicago, will manufacture four styles of machines for 1893, three for gentlemen and one for ladies, under the general name of Monarch. The gentlemen's machines will range in weight from 31 to 41 pounds. Their 32-pound wheel is intended for a road racer or a light road machine, and is built with 30-inch front and rear wheels, or 30-inch front and 28-inch rear. The ladies' machine will weigh less than 35 pounds, constructed on the lines of the double loop tube, with 28 inch wheels. It is finely designed in every respect. The manufacturers remark that their entire line of 1893 Monarchs will be strictly high grade in every particular, and superior, if possible, to their 1892 wheels, which, however, have given perfect satisfaction in every particular. It is their intention to build from 4000 to 6000 wheels for the coming season, and market them through large jobbers among the Hardware, agricultural implement and carriage trades.

Exports.

THE FOLLOWING are the exports of Hardware, Machinery, Metals and related goods from the port of New York to foreign countries for the week ended December 31, 1892. The items for Canada and Mexico include merchandise by sea-going vessels only. The totals following each port or country, and the grand total represent the value of all exports except specie:

ANTWERP.—Total, \$494,471.			
Hardware.....	\$530	Firearms.....	\$900
Steel.....	2,200	Woodware.....	125
Machinery.....	475	Pol. matl.....	138
Rubber Goods.....	425	India Rubber.....	250
Electric Material.....	4,150		
ALEXANDRIA.—Total, \$35.			
Agricult. Impts.....			\$25
AMSTERDAM.—Total, \$8,553.			
Machinery.....	\$900	Sewing Machines.....	\$3,276
Organs.....	110	Iron Safes.....	115
ADEN.—Total, \$17,437.			
ARGENTINE REPUBLIC.—Total, \$30,482.			
Agricult. Impts.....			\$440

AVONMOUTH.—Total, \$40,623.	
BREMERHAVEN.—Total, \$14.	
BOLIVIA.—Total, \$300.	
BRAZIL.—Total, \$160,066.	
Hardware.....	\$2,438
Manufd Iron.....	206
Firearms.....	1,411
Machinery.....	3,149
Sewing Machines.....	3,000
Trunk Matl.....	845
Cutlery.....	475
Sandpaper.....	146
Dental Goods.....	1,530
Bellows.....	8
Combs.....	182
Carriage Material.....	453
Lead.....	92
Brushes.....	14
Twine.....	396
Electrical Goods.....	97
Tanks.....	72
Manufd Wood.....	242
Lamp Goods.....	678
Cartridges.....	19
Tricycles.....	\$92
Pumps.....	107
Nails.....	274
Clocks.....	2,296
Wire Goods.....	3
Velocipedes.....	22
Packing.....	35
Nails.....	314
Cotton gins.....	1,615
Woodware.....	46
Store Trucks.....	43
Tinware.....	10
Scales.....	101
Agate Ware.....	185
Iron Safes.....	316
Windmills.....	78
Organs.....	50
Agricult. Impts.....	346
Carriage.....	499
BELFAST.—Total, \$63.	
BRITISH WEST INDIES.—Total, \$163,777.	
Manufd Wood.....	\$131
Sewing Machines.....	294
Stereoscopes.....	50
Agricult. Impts.....	131
Woodware.....	285
Carriage Material.....	81
Scales.....	47
Firearms.....	476
Railroad Ties.....	7,393
Clocks.....	96
Nails.....	100
Wagon Matl.....	54
Iron.....	774
Statue.....	75
Organ.....	30
Tricycles.....	12
Tankage.....	240
Railroad cars.....	3,210
Trunks.....	680
Grindstones.....	10
Hardware.....	407
Manufd Iron.....	306
Lamp Goods.....	\$240
Electrical Matl.....	58
Tinware.....	43
Building Matl.....	313
Cartridges.....	5
Pipe.....	60
Twine.....	72
Cutlery.....	25
Plated Ware.....	73
Carriages.....	1,000
Gas Cyls.....	300
Refrigerators.....	53
Copper Matte.....	6
Speltades.....	500
Piano.....	350
Rubber Goods.....	42
Water Coolers.....	13
Freezers.....	28
Axles.....	15
Brushes.....	5
BERLIN.—Total, \$1,757.	
Typewriters.....	\$630
Woodware.....	100
BRITISH GUIANA.—Total, \$65,681.	
Sewing Machines.....	\$60
Pumps.....	15
Manufd Iron.....	134
Slates.....	30
Typewriters.....	185
Water Coolers.....	27
Manufd Wood.....	9
Refrigerators.....	16
Carriages.....	373
Carts.....	58
Lamp Goods.....	140
Trunks.....	\$10
Hardware.....	72
Freezers.....	41
Plated Ware.....	20
Roofing Material.....	1,000
Woodware.....	157
Tinware.....	14
Scales.....	155
Carriage Material.....	32
Machinery.....	63
BRISTOL.—Total, \$190,706.	
Zinc dress.....	\$1,000
Manufd Wood.....	\$823
BARCELONA.—Total, \$917.	
AUSTRALIA.—Total, \$54,069.	
Typewriters.....	\$250
Rubber Goods.....	295
Hardware.....	3,367
Clocks.....	178
Manufd Iron.....	468
Carriage Material.....	1,328
Axle Grease.....	63
Carriage.....	110
Cartridges.....	314
Woodware.....	1,387
Agricult. Impts.....	1,469
Emery Cloth.....	50
Clocks.....	1,257
Trunks.....	48
Primers.....	77
Manufd Wood.....	787
Nails.....	\$50
Lamp Goods.....	458
Organs.....	1,128
Slates.....	62
Pumps.....	492
Bird Cages.....	40
Emery Wheels.....	60
Firearms.....	410
Primed Shells.....	80
Windmills.....	300
Stamped Ware.....	10
Nails.....	238
Sandpaper.....	90
Plated Ware.....	890
Scales.....	1,218
Tinware.....	225
BRITISH EAST INDIES.—Total, \$57,843.	
Pumps.....	\$91
Lamp Goods.....	249
Hardware.....	\$79
Slate.....	\$280
BORDEAUX.—Total, \$56,943.	
Copper.....	\$1,100
BUDAPEST.—Total, \$1,099.	
Machinery.....	\$185
Hardware.....	\$87
BREMEN.—Total, \$61,625.	
Electric Material.....	\$250
Manufd Wood.....	10
Hardware.....	2,427
Saws.....	42
Clocks.....	85
Manufd Iron.....	7
Woodware.....	141
India Rubber.....	\$1,000
Machinery.....	268
Cutlery.....	150
Agricult. Impts.....	1
Emery Wheels.....	138
Typewriters.....	464
BRITISH POSSESSIONS IN AFRICA.—Total, \$56,113.	
Sewing Machines.....	\$40
Woodware.....	146
Manufd Wood.....	3,779
Organs.....	850
Manufd Iron.....	2,869
Clocks.....	500
Sash Cord.....	332
Razor Strops.....	35
Windmills.....	375
Sewing Machines.....	106
Hardware.....	2,481
Nails.....	\$300
Freezers.....	125
Carriage Matl.....	476
Railroad Trucks.....	200
Agricult. Impts.....	2,959
Scales.....	995
Firearms.....	76
Wheelbarrows.....	426
Trunks.....	782

CHARKOW.		ECUADOR.—Total, \$11,440.		LISBON.—Total, \$405.	
Agricult. Impts.	\$378	Clocks.	\$110	Manufd Iron.	\$3,075
CHEMNITZ.		Sheaths.	86	Sewing Machines.	192
Machinery.	\$400	Firearms.	61	Samplers.	170
CUBA.—Total, \$414,319.		Sandpaper.	39	Lamp Goods.	65
Manufd Iron.	\$11,587	Trunks.	13	Wheelbarrows.	45
Lamp Goods.	1,825	Gold Leaf.	109	Musical Instru-	
Blowers.	30	Cutlery.	286	ments.	20
Tinware.	572	Hardware.	226	Piano.	300
Railroad Material.	9,042	Machinery.	587		
Plated Ware.	631	FRANKFORT.			
Tricycles.	99	Tacks.			\$1,068
Screens.	188	FURTH.—Total, \$150.			
Novelties.	169	GIBRALTAR.—Total, \$68.			
Woodware.	551	GENOA.—Total, \$91,670.			
Toilet Sets.	156	GOTTENBURG.—Total, \$3,280.			
Clocks.	205	Wire.			\$250
Manufd Copper.	824	GLASGOW.—Total, \$193,930.			
Pins.	82	Hardware.	\$57	Sewing Machines.	\$2,526
Electric Material.	1,008	HANOVER.—Total, \$35.			
Iron.	70	HALIFAX.—Total, \$8.			
Showcases.	54	HAYTI.—Total, \$163,982.			
Railroad Veloci-		Manufd Wood.	\$103	Manufd Iron.	\$613
pede.	87	Blocks.	83	Lamp Goods.	77
Valves.	645	Twine.	24	Brushes.	196
Spikes.	651	Sewing Machines.	210	Woodware.	39
Trunk Matl.	67	Roof Material.	65	Sandpaper.	65
Pumps.	3,363	Scales.	35	Optical Goods.	10
Granite Ware.	9	Rubber Goods.	208	Nails.	152
Sugar Wagons.	6,750	Pumps.	62	Wheelbarrows.	31
Cutlery.	2,578	Carts.	880	Machinery.	11,673
Bird Cages.	85	Wheels.	47	Packing.	73
Store Trucks.	109	Carriages.	603	Manufd Steel.	7
Wringers.	10	Brass Tubes.	1,453	Ship Chaudiery.	10
Steel.	10,000	Bellows.	20	Windlases.	25
Gas Meters.	350	Store Trucks.	19	Slates.	3
Launch.	600	Hardware.	2,441	Clocks.	5
Ice Cans.	900	HULL.—Total, \$251,611.			
Silver Ware.	134	Firearms.	\$189	Cutters.	\$300
Packing.	170	Emery Wheels.	95	Manufd Wood.	240
Carriage Matl.	62	Hardware.	1,190	Machinery.	690
Organs.	3	Clocks.	472	Sewing Machines.	1,680
Hardware.	11,003	Razor Strogs.	80	Whetstones.	16
Manufd Wood.	1,988	Agricult. Impts.	361	Wringers.	245
CHILL.—Total, \$10,653.		HONG KONG.—Total, \$9,330.			
Manufd Iron.	\$51	Rubber Goods.			
Dental Matl.	2,434	Plated Ware.			
Firearms.	370	Clocks.			
Watches.	208	Saws.			
Scopes.	235	Tinware.			
COPENHAGEN.—Total, \$38,268.		CHINA.—Total, \$296,927.			
Rubber Goods.	\$970	Agricult. Impts.	\$896	Indian Clubs.	\$10
Valves.	104	Clocks.	565	Machinery.	800
Hardware.	136	Crucibles.	26	Lamp Goods.	146
Wringers.	29	Organs.	135	Carriage.	250
Manufd Iron.	302	Manufd Wood.	2	Freezers.	30
Brit. Ware.	100			Woodware.	31
CHRISTIANIA.—Total, \$129,946.		Clocks.	\$1,319	Manufd Wood.	25
Typewriters.	\$150	Sewing Machines.	383	Typewriters.	100
Car Springs.	369	Compasses.	215		
Nails.	15	Agricult. Impts.	9		
Hardware.	897	Bird Cages.	27		
Organs.	450	Hardware.	11		
CENTRAL AMERICA.—Total, \$43,310.		Electric Material.	38		
Manufd Wood.	\$308	Cash Registers.	\$400		
Carriages.	314	Manufd Wood.	308		
Scales.	131	Plated Ware.	14		
Saws.	131	Agricult. Impts.	1,100		
Cutlery.	42				
Plated Ware.	405				
Iron.	190				
Brass Goods.	478				
Iron Pipe.	304				
Earthen Ware.	7				
Scientific Instru-					
ments.	250				
Water Closet.	10				
Manufd Steel.	1,339				
Wheelbarrows.	158				
Twine.	41				
Rubber Goods.	280				
Nails.	56				
Mag. metal.	53				
Woodware.	11				
Tinware.	61				
Firearms.	99				
CONSTANCE.		HAMBURG.—Total, \$435,228.			
Hardware.	\$147	Sand Paper.	\$557	Steel.	\$320
CHUX DE FOND.—Total, \$98.		Organs.	1,300	Nails.	60
DUBLIN.—Total, \$1,750.		Machinery.	1,878	Cutlery.	136
DUNKIRK.—Total, \$2,800.		Freezers.	28	Agricult. Impts.	1,458
DUNDEE.—Total, \$197.		Wringers.	755	Whetstones.	416
DUTCH WEST INDIES.—Total, \$137.		Plated Ware.	184	Manufd Wood.	9
DROTHERIM.—Total, \$755.		Firearms.	95	Cutlery.	189
DUTCH EAST INDIES.—Total, \$1,418.		Emery.	20	Manufd Iron.	171
Hardware.	\$160	Tinware.	23	Britannia Ware.	250
Syringes.	519	Primed Shells.	1,215	Beltng.	430
Rubber Goods.	128	Electrical Matl.	2,950	Sewing Machines.	18,489
DANISH WEST INDIES.—Total, \$14,945.		Polish Material.	139	India Rubber.	3,250
Ammunition.	\$58	Hardware.	1,292	Gun Primers.	37
Iron Tanks.	1,121	HAVRE.—Total, \$533,801.			
Pulleys.	120	Hardware.	\$1,109	India Rubber.	150
Manufd Iron.	162	Electric Material.	575	Aluminum.	\$190
Twine.	61	Manufd Iron.	75	Woodware.	15
Machinery.	2,382	Emery Wheels.	661	Machinery.	4,017
Carriage Matl.	27	Manufd Wood.	1,279	Agricult. Impts.	2,465
FURTH.—Total, \$150.		Filing Cabinets.	8	Sewing Machines.	360
GIBRALTAR.—Total, \$68.		Pumps.	108	Organs.	320
GENOA.—Total, \$91,670.		Copper.	278,001	Typewriters.	858
GOTTENBURG.—Total, \$3,280.		Rubber Goods.	70	Carpet Sweepers.	165
GLASGOW.—Total, \$193,930.		Fiber Ware.	100	Clocks.	615
HANOVER.—Total, \$35.		Nickel Matte.	70	Wire Mats.	95
HALIFAX.—Total, \$8.		JAPAN.—Total, \$27,389.			
HAYTI.—Total, \$163,982.		Clocks.	\$4,474	Machinery.	140
HULL.—Total, \$251,611.		Scales.	792	Hardware.	458
HONG KONG.—Total, \$9,330.		Needles.	120	Sand Paper.	500
HAMBURG.—Total, \$435,228.		Shot.	11	Cartridges.	36
Sand Paper.	\$557	India Rubber.	439	Lamp Goods.	106
Organs.	1,300	Electrical Matl.	401	Firearms.	689
Machinery.	1,878	Water Meters.	\$350		
Freezers.	28	KIEF.			
Wringers.	755	Agricultural Implements.			\$525
Plated Ware.	184	LIEGE.—Total, \$76.			
Firearms.	95	LYONS.—Total, \$375.			
Emery.	20	LIBAU.—Total, \$780.			
Tinware.	23	LEIPZIG.—Total, \$2,540.			
Primed Shells.	1,215	Printing Presses.			\$1,700
Electrical Matl.	2,950	LEEDS.			
Polish Material.	139	Machinery.			\$400
Hardware.	1,292	LONDON.—Total, \$272,143.			
HAVRE.—Total, \$533,801.		Bath Tubs.	\$75	Oxide Zinc.	952
Hardware.	\$1,109	Typewriters.	4,824	Musical Insts.	156
Electric Material.	575	Organs.	915	Electros.	180
Manufd Iron.	75	Hardware.	5,451	Manufd Wood.	1,569
Emery Wheels.	661	Machinery.	470	Organ matl.	73
Manufd Wood.	1,279	Pumps.	84	Electrical Matl.	529
Filing Cabinets.	8	Minerals.	65	Emery Wheel.	35
Pumps.	108	Woodware.	388	Firearms.	300
Copper.	278,001	Carriages.	2,149	Corset Wire.	132
Rubber Goods.	70	Rubber Goods.	554	Lamp Goods.	269
Fiber Ware.	100	Manufd Iron.	129	Sewing Machines.	6,195
Nickel Matte.	70	KIEF.			
JAPAN.—Total, \$27,389.		Agricultural Implements.			\$525
Clocks.	\$4,474	LIEGE.—Total, \$76.			
Scales.	792	LYONS.—Total, \$375.			
Needles.	120	LIBAU.—Total, \$780.			
Shot.	11	LEIPZIG.—Total, \$2,540.			
India Rubber.	439	Printing Presses.			\$1,700
Electrical Matl.	401	LEEDS.			
Water Meters.	\$350	Machinery.			\$400
KIEF.		LONDON.—Total, \$272,143.			
Agricultural Implements.		Bath Tubs.	\$75	Oxide Zinc.	952
LIEGE.—Total, \$76.		Typewriters.	4,824	Musical Insts.	156
LYONS.—Total, \$375.		Organs.	915	Electros.	180
LIBAU.—Total, \$780.		Hardware.	5,451	Manufd Wood.	1,569
LEIPZIG.—Total, \$2,540.		Machinery.	470	Organ matl.	73
Printing Presses.		Pumps.	84	Electrical Matl.	529
LEEDS.		Minerals.	65	Emery Wheel.	35
Machinery.		Woodware.	388	Firearms.	300
LONDON.—Total, \$272,143.		Carriages.	2,149	Corset Wire.	132
Bath Tubs.	\$75	Rubber Goods.	554	Lamp Goods.	269
Typewriters.	4,824	Manufd Iron.	129	Sewing Machines.	6,195
Organs.	915	KIEF.			
Hardware.	5,451	Agricultural Implements.			\$525
Machinery.	470	LIEGE.—Total, \$76.			
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STETTIN.—Total, \$12,251.	
SPANISH POSSESSIONS IN AFRICA.—Total, \$2,014.	
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Yellow Metal Sheathing	\$1,005
SMYRNA.—Total, \$2,177.	
SAN DOMINGO.—Total, \$11,850.	
Manufd Iron.....	879
Machinery	127
Iron	90
Boilers.....	1,400
Railroad Material	4
Woodware.....	1
Nails.....	70
Agricuit. Impls.....	63
Sewing Machine	50
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TRIESTE.—Total, \$58,425.	
URUGUAY.—Total, \$1,407.	
Hardware.....	\$252
UNITED STATES OF COLOMBIA.—Total, \$63,385.	
Hardware.....	\$1,429
Manufd Wood.....	10
Machinery	4,483
Elect. Goods	651
Plated Ware.....	111
Nails.....	30
Tinware.....	261
Smokestack	50
Organs.....	206
Packing	33
Vessel Matl.....	1,116
Cartridges.....	187
Caldrons.....	271
Pipes.....	39
Div. Dresses.....	405
Agricuit. Impls.....	8
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VENICE.—Total, \$130.	
ZURICH.—Total, \$25.	
Grand total	\$6,321,667

Paints and Colors.

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Between lively competition on the part of "outside" manufacturers of White Lead and a resort to the "heroic remedy" by the associated manufacturers of Paris Green, the Paint market has received a stirring up that is interesting in its way, even if not particularly profitable to the manufacturing interests in those particular lines. The competition in Leads not only bears directly upon the market for that Pigment, but serves to unsettle values for most varieties of prepared Paints that figure as competitors with the corrodors' product, while the sharp reduction in prices of Paris Green affects other insecticides directly and Green Colors generally in an indirect way. Apart from the above, there are no distinctly new features to note for the past week, but adverse weather influences, along with the conditions outlined, have served to restrain buyers' operations and prompt more than ordinary reserve in the placing of orders for future delivery. Hence rather quiet markets, with wholesale buyers inclined to quietly await developments until consumptive demand forces freer purchases.

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ward. The same rate is quoted for the product of F. W. Gerdes, Pittsburgh, Pa., and those prices, it is stated in some quarters, are being met by manufacturers of a Western brand for which a very prominent New York jobbing firm are Eastern selling agents. Rumors go even so far as to insinuate that the National Company's revised list is strictly nominal and undersold at second hands if, indeed, not from headquarters in territory where competition is keenest. Cheap Leads, as a matter of course, suffer more or less in the contest, and "cuts" of ¼¢ or more below the rates that prevailed at the close of last year are the rule, rather than the exception.

Red Lead and Litharge.—The reduced prices that went into effect on the 3d inst. have led to no perceptible increase of business in either commodity. Consumers of low grade product have thus far placed comparatively small orders only, although prices are quoted that would seem to be temptingly low, while the higher grades are not only taken in a perfunctory manner, but to a moderate extent. In fact, the general market bears a dull as well as rather weak appearance.

Zincs.—No changes in manufacturers' prices for American Oxide are announced, and, according to current report, the position of the market is very good. In any event, it is asserted that orders are coming in quite as freely as usual at this season of the year, that the prospective large output during the first quarter is well under the control of orders and that the old list prices are adhered to. The suggestion of the probability of any *sub rosa* special prices being made is treated by local sales agents as being far-fetched. Foreign Oxide is meeting with sale, but the little business passing is at the old line of prices.

Colors.—In this line about the only striking change is a reduction of 3¢ per lb in the list price for Paris Green by the Associated manufacturers. This brings the rate down to 10¢ for maximum quantities in bulk and the decline is strongly suggestive of a move in the direction of wiping out those manufacturers who elect to remain independent. Other dry colors and oil colors generally are moving at practically former prices, but in moderate quantities only.

The new list for Paris Green adopted by the associated manufacturers is as follows:

In	Lots of—		
	1 ton or over,	1000 to 2000 lb,	Less than 1000 lb,
Arsenic, kegs or casks.	\$0.10	\$0.104	\$0.104
Kegs of 100 to 175 lb....	.104	.104	.11
Iron cans or boxes, 14, 28 or 56 lb.....	.12	.124	.124
Paper boxes, 2 to 5 lb....	.12	.124	.124
Paper boxes, 1 lb.....	.124	.124	.13
Paper boxes, ¼ lb.....	.144	.144	.15
Paper boxes, ⅛ lb.....	.164	.164	.17

These prices are free on board at New York, Philadelphia, Boston and Springfield, Mass. One-pound to 5 pound tin boxes put up to order at an advance of ¼¢ per lb over paper boxes of similar sizes; ½ and ¾ lb not packed in tins under any circumstances. Terms, payable July 1, 1893. Discount 6% per annum for unexpired term. No brokerage or commission allowed to buyers.

Miscellaneous.—There has been no change in the market for Chalk, Whiting or Putty, demand being moderate and sellers reserved, for the time being. Barytes and Clays generally are also quiet, with sellers' prices showing no important change.

Oils and Turpentine.

High cost of Lard and inferior greases still figures as the conspicuous feature in the market for lubricants generally and also serves to obstruct movements in the direction of holding in check the natural tendency of Cotton-seed Oils toward a higher level. In short, the exceptionally strong position of the market for Hog

products has seldom if ever exerted as great influence, directly or indirectly, upon animal and vegetable Oils as it does at the present time. Its influence extends through soap-making materials as well as through the market for lubricants, and is no mean factor in regulating market value for Lard compounds and other culinary greases generally. All accounts go to show that the hog supply thus far this season is far behind calculations and nothing suggestive of a turn for the better in the immediate future comes to the surface. Still, the element of speculation exists in an unusual degree, and the mere possibility that a reaction may take place tends to check business in Oils, momentarily at least, and the speculative elements figure most conspicuously as factors in sustaining prices.

Linseed Oil.—This product is doubtless independent of the speculative factor governing values of most lines of Oils at present, but it is no secret that "combine" or "trust" influence is keeping prices above the level that would likely prevail were there no restrictions upon competition in this market and vicinity. In any event the general report goes to show that production is still on a liberal scale, that demand is no better than usual in January, and that there is plenty of Oil to meet a full average demand.

Cotton-Seed Oils.—The past week has been replete with at least interesting maneuvers in this branch of the market. Prominent among these may be noted liberal purchases in the primary markets by large home consumers, a little more export interest, certain support from speculative operators prominently identified with the cotton business, and withal some suggestion of "bearish" spirit on the part of several firms who are engaged in the Oil trade exclusively. The records of transactions during the week show more or less variation in prices, and warrant the statement that values are still relatively lower here than in the primary markets. Still values stand practically the same at this writing as they were a week ago and the change in character of local business and demand is easily measured. The only new feature in this particular is a little more export interest in high grade refined Oil for butter making, sales of which have been made at 50¢ for prompt and 55¢ for March delivery. Under date of Providence, R. I., January 7, the Union Oil Company issued a revised list quoting as follows:

	1 to 10 barrels.		10 barrels and over.
	barrels.	over.	
Pure Salad Oil, per gallon	\$0.54	\$0.54	\$0.58
Olive Flavor, ".....	.55	.55	.58
Winter White, ".....	.55	.55	.58
Winter Yellow, ".....	.54	.54	.58

The above sold by weight, 7½ lb to the gallon. Terms, net cash.

Lard Oil.—Sellers of prime quality Oil at less than 90¢ are now extremely few and far between. In fact, it is an open secret that something below the standard is worked in where a cheaper rate is made. Some local pressers are asking 91¢ @ 92¢ for strictly Prime Winter Oil and refuse to take orders at less pending a turn in their favor in the market for raw material.

Miscellaneous.—There have been no new developments in any branch of the market. Demand is rather slow, as usual at this season of the year, but the strong statistical position remains unimpaired and full former prices prevail all along the line. Olive, Coconut and Palm Oils are steady at former prices but selling in routine way only.

Turpentine.—Local business in spirits has been commonplace and of merely fair aggregate. The demand has likewise failed to reflect anything more than ordinary interest on the part of either export or home trade buyers, and prices have varied in a slight degree only.

The Emons Wagon Jack.

The Covert Mfg. Company, West Troy, N. Y., have just placed on the market the Emons patent wagon jack, as herewith illustrated, Figs. 1 and 2. The jack, with late improvements, is superior in construction, and cheap as a first-class wagon jack. Its lifting capacity is over 1800 pounds,



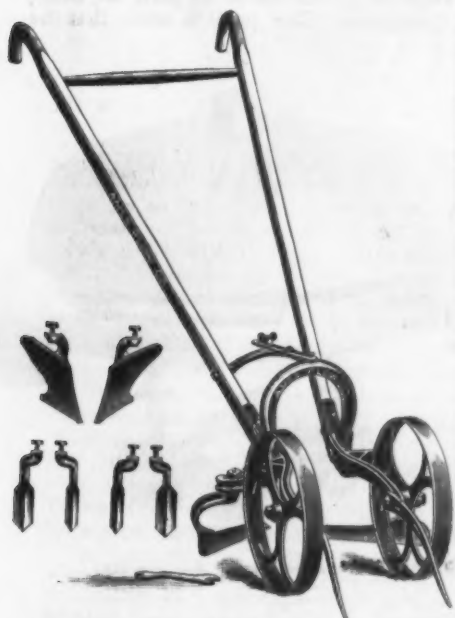
Fig. 1.—The Emons Wagon Jack.

Fig. 2.—Emons Jack Raised.

and all its parts being made of iron it is indestructible. Weighing only 7½ pounds it is easily handled and adjusted, and is a general favorite with those using it. The flat solid base is referred to as a great improvement over jacks having a ring or rim base, as it cannot settle in the ground when in use or tip when lifting a heavy load. These jacks are guaranteed by the makers to give perfect satisfaction.

Double-Wheel Hoe, Cultivator and Plow.

Ames Plow Company, Boston and 53 Beekman street, New York, are putting this combination implement on the market,



Double-Wheel Hoe, Cultivator and Plow.

as shown in the accompanying cut. The feature of this tool is the new universal adjustable arch, by which, it is explained, not only the depth of work can be gauged,

but which by an ingenious device enables the teeth to be pitched at any angle desired. The attachments are four cultivator teeth, two hoes, two plows and two leaf guards. This is a hand implement, and is referred to as embracing all the good points of older efforts in the same line and in addition offering new features. The idea has been to provide an implement which can be used as a straddle hoe on market-garden crops and also be suitable for use between rows.

Starrett's Calipers.

L. S. Starrett, Athol, Mass., is putting on the market a line of calipers, as represented in the accompanying cuts. Figs.



Fig. 1.—No. 38 Lock-Joint Calipers.

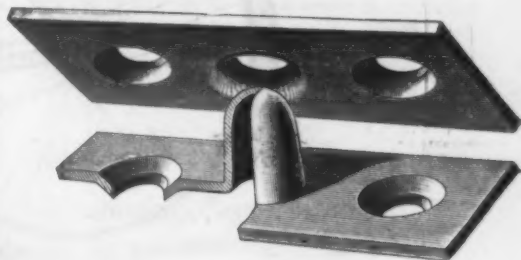
1 and 2 show lock joint calipers, which are made in sizes from 4 to 24 inches. In the under side of the short arm is a slot containing a stiff spring. Riveted into the middle leg and projecting through an opening in the arm is a threaded stud, on which is a knurled nut having a beveled hub; this bears against a cone in the arm and the action of the spring holds them together. Turning the nut presses them apart and adjusts the leg while the joint is

quickly locked firm in the joint and yet provided with a sensitive adjustment. They are made to supersede the old style firm joint, also the lock joint with split leg adjustment formerly made by him. The improvement consists in a socket joint made tapering and locked or released by a partial turn of the knurled disk drawing it together. A spring washer under the disk maintains an easy friction in the joint when unlocked.

The caliper shown in Fig. 3 not only has the excellent features of Nos. 38 and 39, but in addition to common use may be used inside of chambered cavities, over flanges, &c., removed and replaced without losing the size calipered. This is done by loosening the nut binding one arm to the auxiliary leaf and swinging it out or in, while the joint is locked, to clear the obstruction, then moving it back against a stop, where it will show the exact size measured. A lock-joint caliper is also made in form similar to that shown in Fig. 1. The hermaphrodite caliper, Fig. 4, has a lock-joint attachment and sensitive adjustment. It is light and stiff, with large capacity, instantly opened, closed and locked. The points are nicely tempered. This is also made with one sharp point and one curved point, as in Fig. 3.

Brass Dowel.

Timmis & Clissold, Bound Brook, N. J., are offering brass dowels, as shown herewith. These are stamped from sufficiently



Brass Dowel.

heavy sheet brass for use by pattern makers, cabinet makers and others. The manufacturers claim that in this way a perfect fitting pin is provided



Fig. 2.—No. 39 Lock-Joint Calipers.



Fig. 3.—No. 37 Lock-Joint Transfer Caliper.



Fig. 4.—No. 43 Hermaphrodite Caliper.

locked. The spring takes up all back lash, so that the legs are firm. The calipers are referred to as being simple, light, low priced and reliable, of wide scope for both inside and outside work, and can be instantly adjusted to their full extent and as

that does not swell with water or shrink from heat, thus insuring ease in molding and true castings, with no overlap; that they save time and expense in the pattern room and foundry, as they are let in quickly; that they do not clog with

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STAVANGER.—Total, \$400.	
STOCKHOLM.—Total, \$5,908.	
Wheels.....	\$353 Car Springs..... \$780
STETTIN.—Total, \$12,251.	
SPANISH POSSESSIONS IN AFRICA.—Total, \$2,014.	
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Yellow Metal Sheathing	\$1,006
SMYRNA.—Total, \$2,177.	
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Railroad Material	4
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	1 ton or over,	1000 to 2000 lb,	Less than 1000 lb,
Arsenic, kegs or casks.....	\$0.10	\$0.10½	\$0.10¾
Kegs of 100 to 175 lb.....	.10½	.10¾	.11
Iron cans or boxes, 14, 28 or 56 lb.....	.12	.12½	.12¾
Paper boxes, 2 to 5 lb.....	.12	.12½	.12¾
Paper boxes, 1 lb.....	.12½	.12¾	.13
Paper boxes, ½ lb.....	.14½	.14¾	.15
Paper boxes, ¼ lb.....	.16½	.16¾	.17

These prices are free on board at New York, Philadelphia, Boston and Springfield, Mass. One-pound to 5 pound tin boxes put up to order at an advance of ¼¢ per lb over paper boxes of similar sizes; ½ and ¾ lb not packed in tins under any circumstances. Terms, payable July 1, 1893. Discount 6¢ per annum for unexpired term. No brokerage or commission allowed to buyers.

Miscellaneous.—There has been no change in the market for Chalk, Whiting or Putty, demand being moderate and sellers reserved, for the time being. Barytes and Clays generally are also quiet, with sellers' prices showing no important change.

Oils and Turpentine.

High cost of Lard and inferior greases still figures as the conspicuous feature in the market for lubricants generally and also serves to obstruct movements in the direction of holding in check the natural tendency of Cotton-seed Oils toward a higher level. In short, the exceptionally strong position of the market for Hog

products has seldom if ever exerted as great influence, directly or indirectly, upon animal and vegetable Oils as it does at the present time. Its influence extends through soap-making materials as well as through the market for lubricants, and is no mean factor in regulating market value for Lard compounds and other culinary greases generally. All accounts go to show that the hog supply thus far this season is far behind calculations and nothing suggestive of a turn for the better in the immediate future comes to the surface. Still, the element of speculation exists in an unusual degree, and the mere possibility that a reaction may take place tends to check business in Oils, momentarily at least, and the speculative elements figure most conspicuously as factors in sustaining prices.

Linseed Oil.—This product is doubtless independent of the speculative factor governing values of most lines of Oils at present, but it is no secret that "combine" or "trust" influence is keeping prices above the level that would likely prevail were there no restrictions upon competition in this market and vicinity. In any event the general report goes to show that production is still on a liberal scale, that demand is no better than usual in January, and that there is plenty of Oil to meet a full average demand.

Cotton-Seed Oils.—The past week has been replete with at least interesting maneuvers in this branch of the market. Prominent among these may be noted liberal purchases in the primary markets by large home consumers, a little more export interest, certain support from speculative operators prominently identified with the cotton business, and withal some suggestion of "bearish" spirit on the part of several firms who are engaged in the Oil trade exclusively. The records of transactions during the week show more or less variation in prices, and warrant the statement that values are still relatively lower here than in the primary markets. Still values stand practically the same at this writing as they were a week ago and the change in character of local business and demand is easily measured. The only new feature in this particular is a little more export interest in high grade refined Oil for butter making, sales of which have been made at 50¢ for prompt and 55¢ for March delivery. Under date of Providence, R. I., January 7, the Union Oil Company issued a revised list quoting as follows:

	1 to 10 barrels.	10 barrels and over.
Pure Salad Oil, per gallon	\$0.54	\$0.55
Olive Flavor, " .....	.55	.55
Winter White, " .....	.55	.55
Winter Yellow, " .....	.54	.52

The above sold by weight, 7½ lb to the gallon. Terms, net cash.

Lard Oil.—Sellers of prime quality Oil at less than 90¢ are now extremely few and far between. In fact, it is an open secret that something below the standard is worked in where a cheaper rate is made. Some local pressers are asking 91¢ @ 92¢ for strictly Prime Winter Oil and refuse to take orders at less pending a turn in their favor in the market for raw material.

Miscellaneous.—There have been no new developments in any branch of the market. Demand is rather slow, as usual at this season of the year, but the strong statistical position remains unimpaired and full former prices prevail all along the line. Olive, Coconut and Palm Oils are steady at former prices but selling in routine way only.

Turpentine.—Local business in spirits has been commonplace and of merely fair aggregate. The demand has likewise failed to reflect anything more than ordinary interest on the part of either export or home trade buyers, and prices have varied in a slight degree only.

The Emons Wagon Jack.

The Covert Mfg. Company, West Troy, N. Y., have just placed on the market the Emons patent wagon jack, as herewith illustrated, Figs. 1 and 2. The jack, with late improvements, is superior in construction, and cheap as a first-class wagon jack. Its lifting capacity is over 1800 pounds,



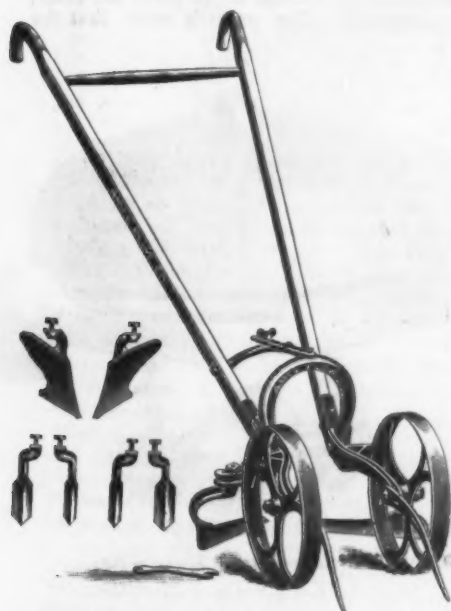
Fig. 1.—The Emons Wagon Jack.

Fig. 2.—Emons Jack Raised.

and all its parts being made of iron it is indestructible. Weighing only 7½ pounds it is easily handled and adjusted, and is a general favorite with those using it. The flat solid base is referred to as a great improvement over jacks having a ring or rim base, as it cannot settle in the ground when in use or tip when lifting a heavy load. These jacks are guaranteed by the makers to give perfect satisfaction.

Double-Wheel Hoe, Cultivator and Plow.

Ames Plow Company, Boston and 53 Beekman street, New York, are putting this combination implement on the market,



Double-Wheel Hoe, Cultivator and Plow.

as shown in the accompanying cut. The feature of this tool is the new universal adjustable arch, by which, it is explained, not only the depth of work can be gauged,

but which by an ingenious device enables the teeth to be pitched at any angle desired. The attachments are four cultivator teeth, two hoes, two plows and two leaf guards. This is a hand implement, and is referred to as embracing all the good points of older efforts in the same line and in addition offering new features. The idea has been to provide an implement which can be used as a straddle hoe on market-garden crops and also be suitable for use between rows.

Starrett's Calipers.

L. S. Starrett, Athol, Mass., is putting on the market a line of calipers, as represented in the accompanying cuts. Figs.



Fig. 1.—No. 38 Lock-Joint Calipers.

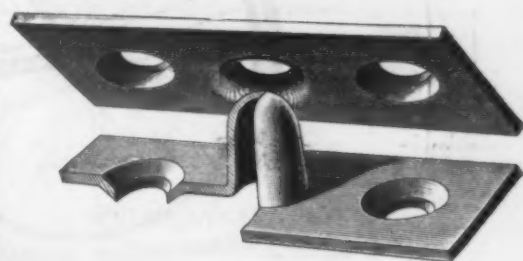
1 and 2 show lock joint calipers, which are made in sizes from 4 to 24 inches. In the under side of the short arm is a slot containing a stiff spring. Riveted into the middle leg and projecting through an opening in the arm is a threaded stud, on which is a knurled nut having a beveled hub; this bears against a cone in the arm and the action of the spring holds them together. Turning the nut presses them apart and adjusts the leg while the joint is

quickly locked firm in the joint and yet provided with a sensitive adjustment. They are made to supersede the old style firm joint, also the lock joint with split leg adjustment formerly made by him. The improvement consists in a socket joint made tapering and locked or released by a partial turn of the knurled disk drawing it together. A spring washer under the disk maintains an easy friction in the joint when unlocked.

The caliper shown in Fig. 3 not only has the excellent features of Nos. 38 and 39, but in addition to common use may be used inside of chambered cavities, over flanges, &c., removed and replaced without losing the size calipered. This is done by loosening the nut binding one arm to the auxiliary leaf and swinging it out or in, while the joint is locked, to clear the obstruction, then moving it back against a stop, where it will show the exact size measured. A lock-joint caliper is also made in form similar to that shown in Fig. 1. The hermaphrodite caliper. Fig. 4, has a lock-joint attachment and sensitive adjustment. It is light and stiff, with large capacity, instantly opened, closed and locked. The points are nicely tempered. This is also made with one sharp point and one curved point, as in Fig. 3.

Brass Dowel.

Timmis & Clissold, Bound Brook, N. J., are offering brass dowels, as shown herewith. These are stamped from sufficiently



Brass Dowel.

heavy sheet brass for use by pattern makers, cabinet makers and others. The manufacturers claim that in this way a perfect fitting pin is provided



Fig. 2.—No. 39 Lock-Joint Calipers.



Fig. 3.—No. 37 Lock-Joint Transfer Caliper.



Fig. 4.—No. 43 Hermaphrodite Caliper.

locked. The spring takes up all back lash, so that the legs are firm. The calipers are referred to as being simple, light, low priced and reliable, of wide scope for both inside and outside work, and can be instantly adjusted to their full extent and as

that does not swell with water or shrink from heat, thus insuring ease in molding and true castings, with no overlap; that they save time and expense in the pattern room and foundry, as they are let in quickly; that they do not clog with

varnish; that they do not have to be cut to make them work, and that they may be used any number of times, as they are interchangeable and durable. The point is made that because of their peculiar shape they are strong, but not heavy, and that they are inexpensive.

New Mail for '93.

William Read & Sons, 107 Washington street, Boston, have brought out for '93 a new patent safety, with the Humber straight diamond frame, as shown in the accompanying cut. It is of Credenda tubing, all drop forgings, 28 inch rear wheel and 30-inch front wheel. It has a long 10-inch ball head, single butt-ended spokes, laced and strongly tied at inter-sections, lapped rim very stiff, New Mail low-handle bars, cork handles, $\frac{3}{8}$ -inch best chain, 6 $\frac{1}{2}$ -inch round steel forged cranks,

club is of wood inclosed in a thin metal tubing, nickel plated, and terminating in a swivel. The telescope adjustment gives the advantage of a short billet in the pocket, which draws out to full length

when in use, the 10-inch club when closed in the pocket measuring 6 inches, and other sizes in proportion. The act of withdrawing the club from the pocket draws out the handle for instant use. The manufacturers remark that this club has all the advantages of the Bean flexible police club, in addition to its extra convenience for carrying in the pocket, and that it marks a new departure in the

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The accompanying cut illustrates a bicycle bell being introduced by the Hard-



Fig 2.—Telescope Club Open for Use.

ware Specialty Company, 61-63 Mulberry street, Newark, N. J. The gongs are all cast and made of pure bell metal. Loose hammers are used producing full bell effects, and it is stated that when the bell is properly adjusted to a bicycle the hammers will fall back and will not come in contact with the gong until the lever is pressed. The bells are put together with screws, and may be easily taken apart and



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dust-proof ball pedals with square rubbers and Garford saddle. The wheel is referred to as strictly high grade in every particular, and the quality of the work as especially recommending it, as every detail is worked out to perfect proportion. The wheel weighs 36 pounds stripped and is furnished with pneumatic tires of the Morgan & Wright style, having an inner

line of officers' pocket billets at once effective, humane and convenient.

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The Winchester Arms Company have reduced the wages of their 300 skilled mechanics about 5 per cent.

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Fig. 1.—Novelty Electric Motor

iron frame in which rests the battery tray. The tray contains two compartments, making two cells in series, the connections being made by copper springs underneath the motor base.

In the bottom of the battery tray are placed a piece of sheet copper and piece of sheet zinc, and between the two is placed a patented battery pad. To each copper is riveted a small copper stud, and when the pad is moistened with a little water and the cover of motor is replaced the motor is ready for operation.

Each charge will, it is stated, run the motor from two to six hours at about 1500 revolutions per minute, and the battery can easily be replenished at any time by using new pads.

The motor is represented as a working model of the Edison dynamo, and is especially adapted for running small mechanical toys, fans, &c. Accompanying it is a 24-page book, in which the workings of both motor and battery are fully ex-



Fig. 2.—The E. A. C. Electric Motor.

plained, together with detailed drawings of the same.

The E. A. C. electric motor and battery outfit, Fig. 2, is similar in operation to the motor shown in Fig. 1, and is run by a pad, composed of an envelope of absorbent material, made circular in form, which incloses the exciting material. The simplicity of this pad, together with its harmlessness, constitutes its chief value, as all that is necessary to set the motor in operation is to moisten the pad with water.

The point is made that with these motors there is no poisonous dust which

can arise from chemicals to irritate the eyes and poison the lungs, no acids to stain the fingers and ruin the carpet, no fire to burn the children or set fire to the house, and no possibility of a steam boiler explosion, such as may take place in the use of steam toys; all of these dangers are obviated by the use of the battery pad.

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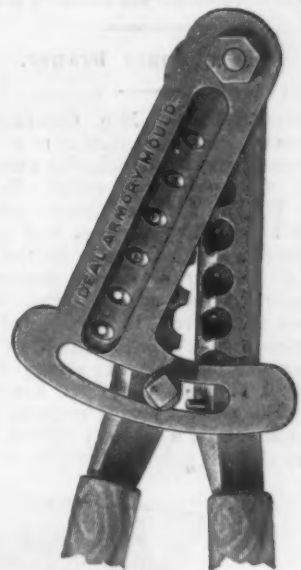


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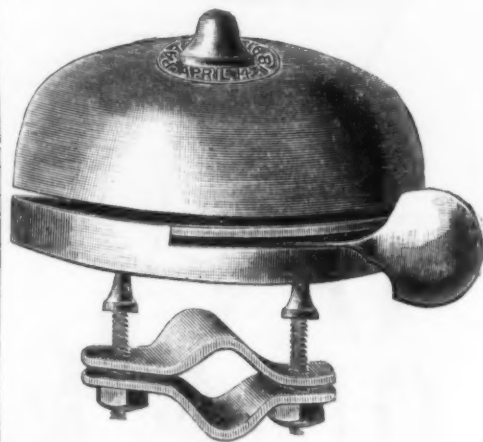
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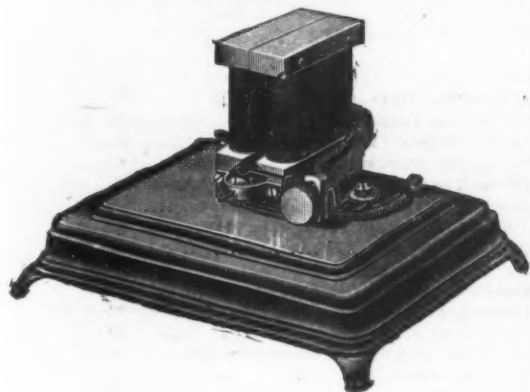


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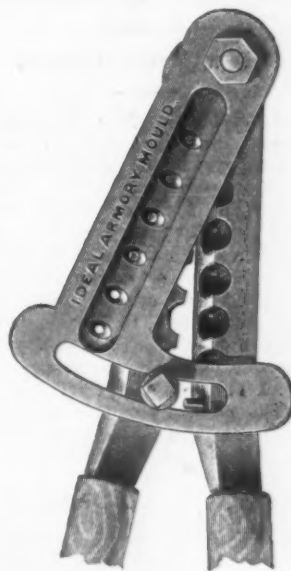


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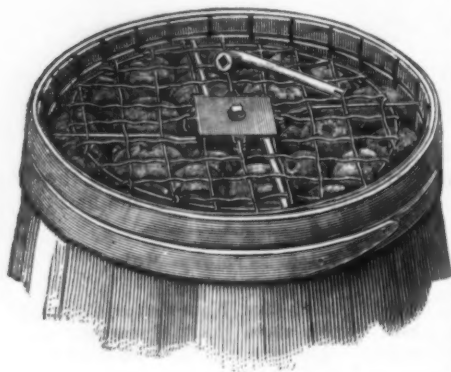
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Phelps Anti-Pilferer.

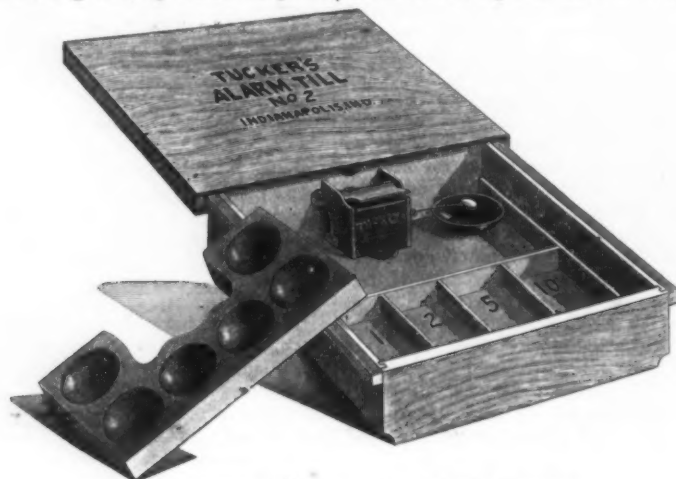
Phelps Anti-Pilferer, manufactured at Leavenworth, Kan., is being introduced to the trade by Joseph Bogardus, 167 Chambers street, New York, and is shown in the accompanying illustration. It consists of a circular frame of heavy wire, suitable in size to fit the top of a barrel. In the center of the frame is a cast-iron case or lock, from which radiate four iron rods, pointed at their outer ends. These pointed rods are at right angles to the lock, the latter being provided with a wrench-shaped key. This key fits a hub in the center of the lock; by turning the hub the rods are thrust outward, each about 2 inches, and thus hold the Anti-Pilferer at the top of the barrel. The

*Phelps Anti-Pilferer.*

pointed rods cannot be drawn back without the aid of a wrench. The device is designed for use on barrels containing vegetables, nuts, &c., to prevent pilfering by the passers-by. These goods are also made in shape suitable for use on berry crates.

A New Money Drawer.

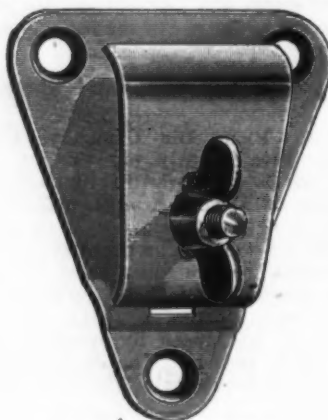
Tucker & Dorsey Mfg. Company, Indianapolis, Ind., manufacturers of hardware specialties, are introducing a medium-priced money drawer called Tucker's Alarm Till No. 2, illustration of which is shown herewith. The lock and general construction are the same as in the regular old-time Tucker money drawer, but the materials used are somewhat lighter and less expensive. It is intended for a low-price money drawer which will give good service, and bears the same guarantee the No. 1 Tucker's Alarm Till has always had. The company have recently put in improved special machinery for the manufacture of these goods, by which they are

*Tucker & Dorsey Mfg. Co.'s New Money Drawers.*

enabled to do the best work, and attention is called to the improvement in the workmanship and finish of their product.

Robinson's Robe Holder.

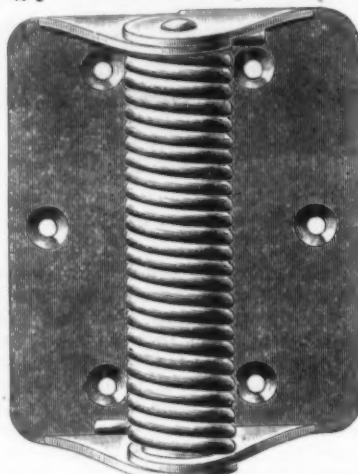
C. W. Cray & Son, 90 and 92 Illinois street, Chicago, are manufacturing for the inventor the Robe Holder as herewith illustrated. It is intended to be attached

*Robinson's Robe Holder.*

by screws to any vehicle by means of the clamp, for the purpose of holding the lap robe. Thus the robe is prevented from sagging, flapping against the wheels, or requiring readjusting when getting out of buggies or cutters. By attaching them to a child's crib the quilt or bed clothes may be held in place. The holder may also be used for holding towels, curtains, &c.

Pullman Wrought-Steel Spring Hinge.

The spring hinge herewith shown is being put on the market by Pullman Sash

*Pullman Wrought-Steel Spring Hinge.*

Balance Company, Rochester, N. Y. These are made in only one size, 3 x 2½, of the

of two screw holes at the nearest point to the hinge part insures strength where it is most needed and prevents the hinge working loose. The manufacturers claim that the hinge is neat, compact, symmetrical in appearance, cannot get out of order; that it is adjusted ready for use; that it has no cast-iron parts to break, and that it is light and strong.

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Current Hardware Prices.

JANUARY 11, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobber, at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 signifies that the goods in question are sold at prices ranging from discount 50 and 10% to discount 50 and 10 and 5%.

Adjusters, Blind—

Domestic..... \$ dos \$3.00, 33¢
Excelator..... \$ dos \$10.00, 50¢
North's..... list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

Eagle Anvil, # 20..... 15@15&5%
Peter Wright's..... 11@11½
Armstrong's Mouse Hole..... 10@11½
Am. Wrought Horse shoe brand..... 10@11½
Frenton..... 10@10½
Wilkinson's..... 10@10½
Moore & Barnes Mfg. Co..... 33¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20%
Cheney Anvil and Vise..... 25%
Allen Anvil and Vise..... 40&10%
Star..... 45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglas Mfg. Co..... 75%
Wm. A. Ives & Co..... 75%
Humphreysville Mfg. Co..... 75%
French, Swift & Co. (F. H. Beecher)
P. & W. Co..... 55%
Rockford Bit Company..... 55%
Cook's, Douglas Mfg. Co..... 55%
Cook's, N. H. Copper Co..... 55%
Ives' Circular Lip..... 55%
Patent Drill Head..... 55%
C. E. Jennings & Co., No. 10, extension
lip..... 40%
C. E. Jennings & Co., No. 30..... 60%
C. E. Jennings & Co., Auger Bits, # set
32½ quarters, No. 5, 30; No. 30, 30, 50, 55%
Lewis' Patent Single twist..... 45%
Russell Jennings' Augers and Bits..... 25&10%
Imitation Jennings' Bits..... 60&60&10%
Pugh's Black..... 20%
Pugh's Jennings Pattern..... 20%
Car Bits..... 60&60&10%
Car Bits, P. S. & W. Co..... 60&10%
Snell's Car Bits..... 15&10%
L'Hommedieu Car Bits..... 15&10%
Sorstner Pat. Auger Bits..... 20%
Cincinnati Bell-Hangers' Bits..... 30&10%
Cincinnati, for metal..... 45&10%

Bit Stock Drills—

Morse Twist Drills..... 60&10&5%
Standard..... 60&10&5%
Cleveland..... 60&10&5%
Syracuse, for metal..... 50&10%
Syracuse, for wood (wood list)..... 30&30&5%
Cincinnati, for wood..... 30&10%
Cincinnati, for metal..... 45&10%

Expansive Bits—

Clark's small, #18; large, #30..... 35&35&10%
Ives' No. 4, # dos \$60..... 40%
Sward's..... 40%
Stearns' No. 1, #22; No. 2, #22..... 35%
Stearns' No. 2, #44..... 20%

Gimlet Bits—

Common..... \$ gross \$2.75@3.25
Diamond..... \$ dos \$1.20..... 40&10%
See..... 25&25&5%
Double Cut, Standard's..... 45&45&10%
Double Cut, Ct. Valley Mfg. Co..... 30&10%
Double Cut, Hartwell's, # gro..... 45&10%
Double Cut, Douglas..... 40&10%
Double Cut, Ives..... 60&60&10%

Hollow Augers—

Ives'..... 33½@33½
French, Swift & Co..... 41%
Douglas..... 41%
Bonney's Adjustable, # dos \$48..... 50%
Stearns'..... 20&10%
Ives' Expansive, each \$4.50..... 50&5%
Universal Expansive, each \$4.50..... 20%
Wood's..... 25&25&10%
Cincinnati Adjustable..... 25&10%
Cincinnati Standard..... 20&10%

Ship Augers and Bits—

L'Hommedieu's..... 15&10@15&10&5%
Watrous..... 25&25&10%
Snell's..... 15&10@15&10&5%
Snell's Ship Auger Pat'n Car Bits..... 15&10@15&10&5%

Awl Hafts—See Hafts, Awl.

Awls—

Awl, Sewing, Common..... \$ gr. 85¢@90¢
Awl, Should. Peg..... \$ gr. \$1.50@1.55
Awl, Pat. Peg..... \$ gr. 30¢@38¢
Awl, Shoulders Brad..... \$ gr. \$1.30@1.40
Awl, Handled Brad..... \$ gr. \$2.50@3.00
Awl, Handled Scratch..... \$ gr. \$4.00@4.50
Awl, Socket Scratch..... \$ dos. \$1.10@1.20

Awl and Tool Sers—See Sets, Awl and Tool.

Axes—

First quality, best brands..... \$7.00
First quality, other brands..... 6.50
Second quality..... 6.50
Axle Grease—See Grease, Axle.

Axles—

No. 1..... 34¢@44¢, No. 2, 5¢@6¢
No. 7 to 14..... 60&10%
No. 16 to 18..... 47%
No. 19 to 22..... 70%
Concord Axles, loose collar..... 44¢@6¢
Concord Axles, solid collar..... 64¢@7¢
National Tubular Self Oiling..... 33¢@34¢

Bag Holders—See Holders,

Balances—

Spring Balances..... 40%
No. 2000 20 30
Chatillon, # dos..... \$0.80 0.95 1.75 net
Chatillon Straight Balances..... 40%
Chatillon Circular Balances..... 50&10%

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel..... \$ dos 3½¢
Iron, Steel Points..... \$ dos 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, #2;
12-inch, #2.25 13½-inch, #2.75; 15-inch,
#3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 50&10%
Chatillon's No. 1..... 40%
Chatillon's No. 2..... 50%
Custer's..... 33½%

Beaters—

Egg—
Dover..... \$ dos \$1.20@1.50
Rival (Standard Co.)..... \$ dos \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ dos \$3.50
Bryant's..... \$ gross \$14.00
Double (H. & R. Mfg. Co.), # gro, No. 0
\$12.00; No. 1, \$15.00; No. 2, \$20.00
Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50
Spiral..... \$ gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00
Paine, Diehl & Co.'s..... \$ gro \$24.00
Silver & Co..... \$ dos \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, #1;
No. 2, #2..... 20%

Bells—

Cow—
Common Wrought..... 60&10%
Western, Sargent's list..... 70&10%
Kentucky, "Star"..... 20&10%
Kentucky, Sargent's list..... 70&10%
Kentucky Durham..... 70&10%
Dodge, Genuine Kentucky..... 70&10%
Texas Star..... 50&10@50&10&5%

Door—

Gong, Abbe's..... 33½@41%
Gong, Yankee..... 40&10%
Gong, Barton's..... 40&10%
Gong, Taylor's..... 25&10%
Crane, Brooks'..... 50&10&10%
Crane, Cone's..... 50&10&10%
Crane, Connel's..... 50&10%
Lever, Sargent's..... 60&10%
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japanned..... 25&10%
Lever, R. & E. Mfg. Co.'s..... 50&10&10%
Pull, Brooks'..... 50&10&10%

Electric—

Wollensak's..... 20%
Bigelow & Dowse..... 20%
Taylor's..... 20%

Hand—

Light Brass..... 70&10@70&10&5%
Extra Heavy..... 70%
White..... 70%
Silver Chime..... 33½@10%
Globe Cone's Patent..... 25&10&35%

Miscellaneous—

Call..... 45&50%
Farm Bells..... \$ 3¢@34¢
Steel Alloy Church and School Bells..... 40%

Bellows—

Blacksmiths'..... 60&10@60&10&5%
Molders..... 40&10&50%
Hand Bellows..... 40&10&50%

Belting, Rubber—

Common Standard..... 70&10@75&5%
Standard..... 70&5@70&10%
Extra..... 60&10@60&10&5%
N.Y.B.&P. Co., Carbon..... 50%
N.Y.B.&P. Co., Para..... 40%

Bench Stops—See Stops, Bench

Benders and Upsetters,

Tire—

Stoddard's Lightning Tire Upsetters..... 15%
Detroit Perfect Tire Bender..... 15%
Green River Tire Benders and Upsetters..... 20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Ad-

justers, Blind

Blind Fasteners—See Fasten-

ers, Blind.

Blind Staples—See Staples,

Blind.

Blocks—

Cleveland Block Co., Mal. Iron..... 50&50&10%
Moore's Novelty, Mal. Iron..... 50%
Sur Grip Steel Tackle Blocks..... 25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84..... 75&10&5@80%
Genuine Eagle, Norway, list Oct. '84..... 80&10%
Phila. pattern, list Oct. 7, '84..... 75&10@80%
R.B. & W., old list..... 70%
Machine, list Jan. 1, 1890..... 80&10%
Bolt Ends, list Jan. 1, 1890..... 80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70&10%
Cast Iron Shutter Bolts..... 70&10%
Cast Iron Chain (Sargent's list)..... 55&10%
Ives' Patent Door Bolts..... 60&10@60&10&5%
Wrought Barrel..... 70&10@10%
Wrought Square..... 70&10@10%
Wrt Shutter, all iron, Stanley's..... 60&10%
Wrt Shutter, Brass Knob..... 40&10%
Wrt Shutter, Sargent's list..... 60&10%
Wrt Sunk Flush, Sargent's list..... 60&10%
Wrt Sunk Flush, Stanley's list..... 50&10%
Wrt B. K. Flush, Co' mr..... 55&10%

Stove and Plow—

Stove..... 60&10@60&10&5%
Plow..... 60&10@50&60&10&10%
R. B. & W., Plow..... 55%

Tire—

Common, list Feb. 23, '83..... 65&65&5%
Port Chester Bolt and Nut Company..... 65%
Empire list Feb. 23, '83..... 65%
Keystone, Philadel., list Oct. '84..... 80%
Norway, Phila., list Oct. '84..... 75%
American Screw Company..... 75%
Norway, Phila., list Oct. 16, '84..... 80%
Philadel., list Oct. 16, '84..... 80%
Bay State, list Feb. 23, '83..... 65%
R. B. & W., Philadel., list Oct. 16, '84..... 80%

Borers, Tap—

Common and Ring..... 20&10%
Tap Borer..... 33½@25%
Enterprise Mfg. Co..... 33½@25%
Clark's..... 33½@25%

Borax—

Per lb. #..... 9¢@10¢

Boring Machines—See Ma-

chines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per do..... 2¢

Braces—

American Bit Brace and Tool Co.
Nos. 10, 12, 20..... 60&10%
Nos. 11, 21, 24, 27..... 70&10%
Nos. 22, 23, 25..... 60&10&5%
Nos. 13, 20, 30, 37..... 70&10&5%
Ball Braces, net..... \$1.12 to \$1.25
Amidon's
Barker's Imp'd Plain..... 75&10@80%
Barker's Imp. Nickel..... 55&10@70%
Ratchet..... 75&10@80%
Eclipse Ratchet..... 60%
Globe Jawed..... 40&40&10%
Corner Brace..... 40&40&10%
Universal, 8 in., \$2.10; 10 in..... \$2.25
Buffalo Ball..... \$1.10@1.15
Barber's
Nos. 10 to 16..... 50&10%
Nos. 30 to 33..... 50&10%
Nos. 40 to 63..... 50&10@50&10&10%
Saxton's
Barker's Imp. Polished..... 75&10@80%
Barker's Imp. Nickel..... 55&10@70%
Ratchet, Polished..... 50&10@60%
Ratchet, Nickel..... 40&10@50%
Buffalo Ball..... net, \$1.10@1.15
Bartholomew's
Nos. 25, 27 and 30..... 50&10@60&5%
Nos. 117, 118, 119..... 70&70&5%
Common Ball, American..... \$1.00@1.10
Fray's Genuine Spofford's..... 50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414
50&10%
Ives' New Haven Novelty..... 70&70&5%
New Haven Ratchet..... 60&5@60&10%
Barber Ratchet..... 60&5@60&10%
Barber's..... 60&5%
Spofford..... 60&5@60&10%
Osgood's Ratchet..... 40&10@50%
P. S. & W. Co., Peck's Patent..... 60%

Brackets—

Shelf, plain..... 65¢@70¢
Regular, list..... 65¢@70¢
Sargent's list..... 70¢@70&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Hens' Self-Inch..... 9 10 9x11
Basting..... \$ Per doz. \$4.50 5.50 6.50
New Haven..... 50%
Wire Goods Co..... 65&10%
Morgan Odorous..... \$ dos. \$12, 50%

Buckets, Well—

Galvanized—

Hill's..... \$ doz. 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad..... \$ doz. 14 qt. \$4.25@4.50
Helwig's Flat Iron Band..... \$3.75
Helwig's Wired Top..... \$ doz \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See

Cleavers, Butchers'.

Butts—

Brass—

Wrought Brass..... 80¢@80&10%
Cast Brass, Tiebout's..... 50%
Cast Brass, Fast..... 33½@10%
Cast Brass, Loose Joint..... 33½@10%

Cast Iron—

Fast Joint, Narrow..... 50&10&5@60%
Fast Joint, Broad..... 50&10@60%
Loose Joint, Japanned..... 50&10@60%
Loose Joint, Jap. with Acorns..... 40%
Parliament Butts..... 40%
Mayer's Hinges..... 40%
Loose Pin, Acorns..... 40%
Loose Pin, Acorns, Japanned..... 40%
Loose Pin, Acorns, Japanned, Plated Tips..... 40%

Wrought Steel—

Fast Joint, Narrow..... 75¢@75%
Fast Joint, Broad..... 75¢@75%
Loose Joint, Broad..... 75¢@75%
Table Butts, Back Flaps, &c..... 40%
Inside Blind, Regular..... 40%
Inside Blind, Light..... 40%
Loose Pin..... 50¢@50&10%

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt..... 5¢@6¢
Burke's One Prong, Blunt..... 5¢@6¢
Burke's Two Prong, Blunt..... 7¢@8¢
Burke's One Prong, Sharp..... 6¢@7¢

Can Openers—See Openers,

Can.

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic
Cartridge Co. # 1000
F. L. Waterproof, 1-10's..... 35¢@37¢
E. R. Trimmed Edge, 1-10's..... 47¢@50¢
E. R. Grad. Edge, Cent. Fire, 1-10's..... 47¢@50¢
Musket, Waterproof, 1-10's..... 50¢@53¢
G. D..... 27¢@30¢
S. R. Genuine Imported..... 45¢
Eley's E. B..... 50¢@53¢
Eley's D Waterproof, Central Fire..... \$1.00

Primers—

Berdan Primers, \$1.00..... 25%
B. L. Caps (Sturtevant Shells) \$1.00..... 25%
All other Primers, \$1.20..... 25%

Cards—

Watson's Cotton, Wool, Horse and
File, list January 28, 1891..... 25%

Carpet Stretchers—

See Stretchers, Carpet.

Carpet Sweepers—

See Sweepers, Carpet.

Cartridges—

Rim Fire Cartridges..... 50&5&5%
Rim Fire Military..... 15&25%
Cent. Fire, Pistol and Rifle..... 25&25&5%
Cent. Fire, Military and Sporting..... 15&25&5%
Blank Cartridges, except 22 and 32 cal.,
additional 10% to above discounts.
Blank Cartridges, 22 cal., \$1.75..... 25%
Blank Cartridges, 32 cal., \$3.50..... 25%
Primed Shells and Bullets..... 15&25&5%
B. B. Caps, Round Ball, \$1.75..... 25%
B. B. Caps, Con. Ball, Swgd., \$2.00..... 25%

Casters—

Bed..... \$ Brass..... 55¢@55&10%
Plate..... \$ Others..... 60¢@60&10%
Shallow Socket..... 40&10%
Deep Socket..... 40&10%
Yale Casters, low list..... 45%
Yale, Gem..... 70%
Martin's Patent (Phoenix)..... 45&10@50&10%
Payson's Anti-friction..... 70¢@70&10%
Payson's Truck..... 60¢@60&10%
Giant Truck Casters..... 50&10%
Stationary Truck Casters..... 50&10%
Socket Truck Casters..... 50¢@50&10%
Gwinner's Common Sense..... 50%
Gwinner's Hercules..... 50%

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic..... 5 ¢ pails # 2 5¢

Chain—

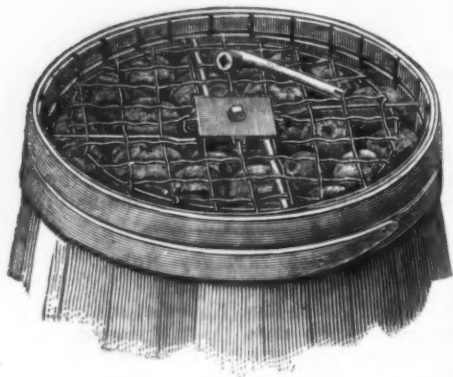
Trace, Wagon and Fancy Chains,
List revised Oct. 15, 1892..... 60¢@60&10%
American Coil, in cask lots,
3-10 5-10 7-10 9-10 11-10
\$7.60 5.30 4.45 3.80 3.65 3.50 3.40 3.30
Less than cask lots, add 10%
German Coil, list July 12, 1892..... 60¢@60&5%
German Halter Chain, list July 12, 1892..... 60¢@60&5%
Covert Halter..... 60¢@60&5%
Covert Traces..... 55¢@55&10%
Covert Heel Chain..... 60¢@60&5%
Onelida Halter Chain..... 60¢@60&5%
Galvanized Pump Chain..... 75¢@75&10%
Jack Chain, Iron..... 80¢@80&10%
Jack Chain, Brass..... 80%

Chalk—

White, case lots, # gr 50¢; small lots, 53¢
Red, case lots, # gr 67¢; small lots, 72¢
Blue, case lots, # gr

Phelps Anti-Pilferer.

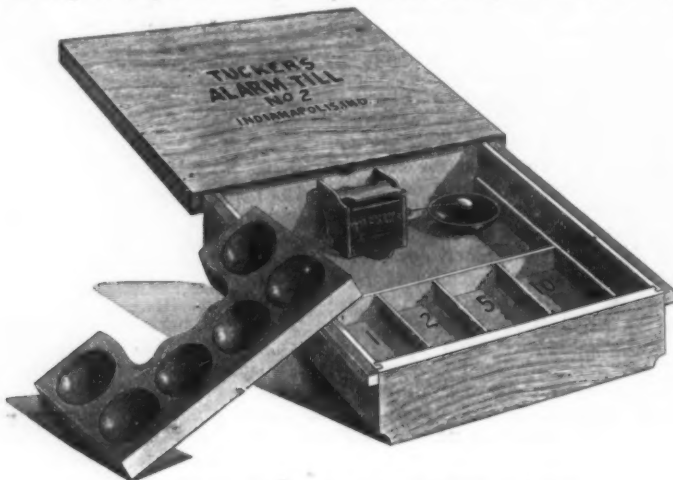
Phelps Anti-Pilferer, manufactured at Leavenworth, Kan., is being introduced to the trade by Joseph Bogardus, 167 Chambers street, New York, and is shown in the accompanying illustration. It consists of a circular frame of heavy wire, suitable in size to fit the top of a barrel. In the center of the frame is a cast-iron case or lock, from which radiate four iron rods, pointed at their outer ends. These pointed rods are at right angles to the lock, the latter being provided with a wrench-shaped key. This key fits a hub in the center of the lock; by turning the hub the rods are thrust outward, each about 2 inches, and thus hold the Anti-Pilferer at the top of the barrel. The

*Phelps Anti-Pilferer.*

pointed rods cannot be drawn back without the aid of a wrench. The device is designed for use on barrels containing vegetables, nuts, &c., to prevent pilfering by the passers-by. These goods are also made in shape suitable for use on berry crates.

A New Money Drawer.

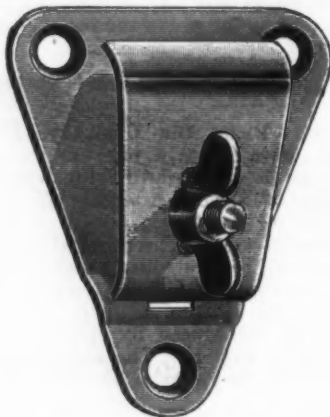
Tucker & Dorsey Mfg. Company, Indianapolis, Ind., manufacturers of hardware specialties, are introducing a medium-priced money drawer called Tucker's Alarm Till No. 2, illustration of which is shown herewith. The lock and general construction are the same as in the regular old-time Tucker money drawer, but the materials used are somewhat lighter and less expensive. It is intended for a low price money drawer which will give good service, and bears the same guarantee the No. 1 Tucker's Alarm Till has always had. The company have recently put in improved special machinery for the manufacture of these goods, by which they are

*Tucker & Dorsey Mfg. Co.'s New Money Drawers.*

enabled to do the best work, and attention is called to the improvement in the workmanship and finish of their product.

Robinson's Robe Holder.

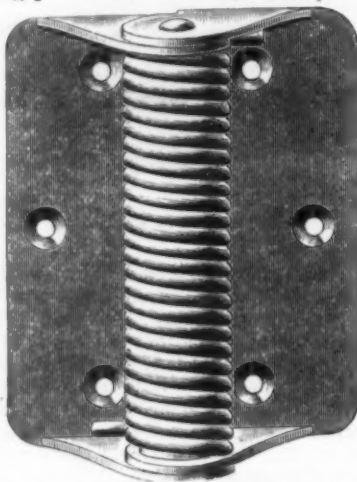
C. W. Crary & Son, 90 and 92 Illinois street, Chicago, are manufacturing for the inventor the Robe Holder as herewith illustrated. It is intended to be attached

*Robinson's Robe Holder.*

by screws to any vehicle by means of the clamp, for the purpose of holding the lap robe. Thus the robe is prevented from sagging, flapping against the wheels, or requiring readjusting when getting out of buggies or cutters. By attaching them to a child's crib the quilt or bed clothes may be held in place. The holder may also be used for holding towels, curtains, &c.

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Current Hardware Prices.

JANUARY 11, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobber, at the figures named.

The character @ is used to indicate a range of price; thus discount 50@100@50@10@5% signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic..... \$ doz \$3.00, 33¢
Excelior..... \$ doz \$10.00..... 50¢10¢25¢
North's..... \$ doz \$11.00..... 50¢10¢25¢
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c

Anvils—

Eagle Anvil, # 24..... 15¢15¢5¢
Peter Wright's..... 11¢11¢4¢
Arncliffe's Horse shoe brand, 11¢11¢4¢
A.M. Wrought Horse shoe brand, 11¢11¢4¢
Frenton..... 10¢10¢
Wilkinson's..... 10¢10¢
Moore & Barnes Mfg. Co..... 33¢4¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00..... 20¢
Cheney Anvil and Vise..... 35¢
Allen Anvil and Vise, \$5.00..... 40¢10¢
Star..... 45¢5¢

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Douglas Mfg. Co..... 75¢
Wm. A. Ives & Co..... 75¢
Humphreysville Mfg. Co..... 75¢
French, Swift & Co. (F. H. Beecher)..... 75¢
P. S. & W. Co..... 75¢
Rockford Bit Company..... 55¢
Cook's, Douglas Mfg. Co..... 55¢
Cook's, N. H. Copper Co..... 60¢
Ives' Circular Lip..... 60¢
Patent Solid Head..... 30¢
C. E. Jennings & Co., No. 10, extension lip..... 40¢
C. E. Jennings & Co., No. 30..... 60¢
C. E. Jennings & Co., Auger Bits, # set, 32¢ quarters, No. 5, \$5; No. 30, \$3.50-25¢
Lewis' Patent Single twist..... 45¢
Russell Jennings' Augers and Bits, 25¢10¢
Imitation Jennings' Bits..... 60¢60¢10¢
Fugh's Black..... 20¢
Fugh's Jennings Pattern..... 20¢
Car Bits..... 60¢60¢10¢
Car Bits, P. S. & W. Co..... 60¢10¢
Snell's Car Bits..... 60¢
L'Hommiedieu Car Bits..... 15¢10¢
Orstner Pat. Auger Bits..... 20¢
Cincinnati Bell-Hangers' Bits..... 30¢10¢

Bit Stock Drills—

Morse Twist Drills..... 50¢10¢5¢
standard..... 50¢10¢5¢
Cleveland..... 50¢10¢5¢
Syracuse, for metal..... 50¢10¢
Syracuse, for wood (wood list) 30¢30¢5¢
Cincinnati, for wood..... 30¢10¢
Cincinnati, for metal..... 45¢10¢

Expansive Bits—

Clark's small, \$18; large, \$20..... 35¢35¢10¢
Ives' No. 4, # doz \$90..... 40¢
Swan's..... 40¢
Steers, No. 1, \$30; No. 2, \$25..... 35¢
Steers' No. 2, \$48..... 20¢

Gimlet Bits—

Common..... \$ gross \$2.75@3.25
Diamond..... \$ doz \$1.25..... 40¢10¢
See..... 25¢25¢5¢
Double Cut, Shepardson's..... 45¢45¢10¢
Double Cut, Ct. Valley Mfg. Co..... 30¢10¢
Double Cut, Hartwell's, # doz, \$5.00-25¢
Double Cut, Douglas..... 40¢10¢
Double Cut, Ives..... 60¢60¢10¢

Hollow Augers—

Ives'..... 33¢4¢39¢
French, Swift & Co..... 410¢
Douglas..... 410¢
Bonney's Adjustable, # doz \$48..... 50¢
Steers' Expansive, each \$4.50..... 50¢5¢
Universal Expansive, each \$4.50..... 25¢25¢10¢
Wood's..... 25¢25¢10¢
Cincinnati Adjustable..... 35¢10¢
Cincinnati Standard..... 25¢10¢

Ship Augers and Bits—

L'Hommiedieu's..... 15¢10¢15¢10¢5¢
Watrous's..... 25¢25¢10¢
Snell's..... 15¢10¢15¢10¢5¢
Snell's Ship Auger Pat'n Car Bits, 15¢10¢15¢10¢5¢

Awl Hafts—See Hafts, Awl.

Awls—

Awls, Sewing, Common..... \$ gr. 85¢40¢
Awls, Should. Peg..... \$ gr. \$1.50¢1.55
Awls, Pat. Peg..... \$ gr. 35¢38¢
Awls, Shouldered Brad..... \$ gr. \$1.30¢1.40
Awls, Handled Brad..... \$ gr. \$2.50¢3.00
Awls, Handled Scratch..... \$ gr. \$4.00¢4.50
Awls, Socket Scratch..... \$ doz \$1.10¢1.20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands..... \$7.00
First qual., other brands..... 6.50 7.00
Second quality..... 5.50 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1..... 34¢4¢4¢, No. 2, 5¢6¢
Nos. 7 to 14..... 60¢10¢
Nos. 15 to 18..... 47¢4¢
Nos. 19 to 22..... 70¢
Concord Axles, loose collar..... 41¢4¢
Concord Axles, solid collar..... 64¢6¢
National Tubular Self Oiling..... 33¢3¢4¢

Bag Holders—See Holders,

Balances—

Spring Balances..... 40¢
Chatillon, # doz..... No. 2000 20 50
Chatillon Straight Balances..... 40¢
Chatillon Circular Balances..... 50¢10¢

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel..... \$ 31¢
Iron, Steel Points..... \$ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10 1/4 inch, #2; 12 inch, \$2.25 13 1/4 inch, \$2.75; 15 inch, \$3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 50¢10¢
Chatillon's No. 1..... 40¢
Chatillon's No. 2..... 50¢
Custer's..... 33¢4¢

Beaters—

Egg—
Dover..... \$ doz \$1.20¢1.50
Duplex (Standard Co.)..... \$ doz \$1.25
Rival (Standard Co.)..... \$ doz \$1.00
Duplex Extra Heavy (Standard Co.)..... \$ doz \$3.50
Bryant's..... \$ gross \$14.00
Double (H. & R. Mfg. Co.)..... \$ gro. No. 0, \$12.00; No. 1, \$15.00; No. 2, \$36.00
Easy (H. & R. Mfg. Co.)..... \$ gro \$12.00
Triple (H. & R. Mfg. Co.)..... \$ gro \$16.50
Spiral..... \$ gro \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.)..... \$ gro \$9.00
Paine, Diehl & Co.'s..... \$ gro \$24.00
Silver & Co..... \$ doz \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1; No. 2, \$2..... 20¢

Bells—

Cow—
Common Wrought..... 60¢10¢
Western, Sargent's list..... 70¢10¢
Kentucky, "Star"..... 20¢10¢
Kentucky, Sargent's list..... 70¢10¢
Kentucky Durham..... 70¢10¢
Dodge, Genuine Kentucky..... 70¢10¢
Texas Star..... 50¢10¢50¢10¢5¢

Door—

Gong, Abbe's..... 33¢4¢10¢
Gong, Yankee..... 45¢10¢
Gong, Barton's..... 40¢10¢50¢
Crane, Taylor's..... 25¢10¢
Crane, Brooks'..... 50¢10¢25¢
Crane, Cone's..... 10¢
Crane, Connel's..... 20¢10¢
Lever, Sargent's..... 60¢10¢
Lever, Taylor's Bronzed or Plated..... net
Lever, Taylor's Japanned..... 25¢10¢
Lever, R. & E. Mfg. Co.'s..... 50¢10¢25¢
Pull, Brook's..... 50¢10¢25¢

Electric—

Wollensak's..... 20¢
Bigelow & Dowse..... 30¢
Taylor's..... 20¢

Hand—

Light Brass..... 70¢10¢70¢10¢5¢
Extra Heavy..... 70¢
White..... 70¢
Silver Chime..... 33¢4¢10¢
Globe Cone's Patent..... 35¢10¢30¢

Miscellaneous—

Call..... 45¢50¢
Farm Bells..... \$ 3¢3¢3¢
Steel Alloy Church and School Bells..... 40¢

Bellows—

Blacksmiths'..... 60¢10¢60¢10¢5¢
Molders'..... 40¢10¢50¢
Hand Bellows..... 40¢10¢50¢

Belting, Rubber—

Common Standard..... 70¢10¢75¢5¢
Standard..... 70¢5¢70¢10¢
Extra..... 60¢10¢60¢10¢5¢
N.Y.B. & P. Co., Carbon..... 50¢
N.Y.B. & P. Co., Para..... 40¢

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..... 15¢
Detroit Perfected Tire Bender..... 15¢
Green River Tire Benders and Upsetters..... 20¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 50¢50¢1¢
Moore's Novelty, Mal. Iron..... 50¢
Sur Grip Steel Tackle Blocks..... 25¢

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84..... 75¢10¢5¢80¢
Genuine Eagle, Norway, list Oct. '84..... 80¢80¢10¢
Phila. pattern, list Oct. 7, '84..... 75¢10¢80¢
R.B. & W., old list..... 70¢
Machine list Jan. 1, 1890..... 80¢10¢
Bolt ends, list Jan. 1, 1890..... 80¢10¢

Door and Shutter—

Cast Iron Barrel, Square, &c..... 70¢10¢
Cast Iron Shutter Bolts..... 70¢10¢
Cast Iron Chain (Sargent's list)..... 65¢10¢
Ives' Patent Door Bolts..... 60¢10¢60¢10¢5¢
Wrought Square..... 70¢70¢10¢
Wrought Shutter..... 60¢10¢
Wrt Shutter, Brass Knob..... 40¢10¢
Wrt Shutter, Sargent's list..... 60¢10¢
Wrt Sunk Flush, Sargent's list..... 60¢10¢
Wrt Sunk Flush, Stanley's list..... 50¢10¢
Wrt B. K. Flush, Co' mr..... 55¢10¢

Stove and Plow—

Stove..... 60¢10¢60¢10¢5¢
Plow..... 60¢10¢50¢60¢10¢10¢
R. B. & W., Plow..... 55¢

Tire—

Common, list Feb. 28, '83..... 65¢65¢5¢
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '80..... 65¢
Keystone, Philadel. list Oct. '84..... 80¢
Norway, Phila., list Oct. '84..... 75¢
American Screw Company:
Norway, Phila., list Oct. 16, '84..... 75¢
Eagle, Phila., list Oct. 16, '84..... 80¢
Philadel., list Oct. 16, '84..... 80¢
Ray State, list Feb. 28, '83..... 65¢
R. B. & W., Philadel., list Oct. 16, '84..... 80¢

Borers, Tap—

Common and Ring..... 20¢10¢
Ives' Tap Borers..... 33¢4¢5¢
Enterprise Mfg. Co..... 20¢10¢30¢
Clark's..... 33¢4¢35¢

Borax—

Per B. A..... 9¢10¢4¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per B..... 24¢

Braces—

American Bit Brace and Tool Co., Nos. 10, 12, 20..... 60¢10¢
Nos. 11, 21, 24, 27..... 70¢10¢
Nos. 12, 23, 25..... 60¢10¢5¢
Nos. 13, 23, 35..... 70¢10¢5¢
Ball Braces, net..... \$1.12 to \$1.25
Amidon's:
Barker's Imp'd Plain..... 75¢10¢80¢
Barker's Imp. Nickeled..... 65¢10¢70¢
Ratchet..... 75¢10¢80¢
Eclipse Ratchet..... 60¢
Globe Jawed..... 40¢40¢10¢
Corner Brace..... 40¢40¢10¢
Universal, 8 in., \$2.10; 10 in., \$2.25
Buffalo Ball..... \$1.10¢1.15
Barber's:
Nos. 10 to 16..... 50¢10¢
Nos. 30 to 33..... 50¢10¢
Nos. 40 to 63..... 50¢10¢50¢10¢10¢
Saxton's:
Barker's Imp. Polished..... 75¢10¢80¢
Barker's Imp. Nickeled..... 65¢10¢70¢
Ratchet, Polished..... 60¢10¢60¢
Ratchet, Nickeled..... 40¢10¢40¢
Buffalo Ball..... net, \$1.10¢\$1.15
Bartholomew's:
Nos. 27 and 30..... 50¢10¢60¢5¢
Nos. 117, 118, 119..... 70¢70¢5¢
Common Ball, American..... \$1.00¢\$1.10
Fray's Genuine Spofford's..... 50¢5¢50¢10¢
Fray's Nos. 70 to 120, 81 to 123, 207 to 414

Ives' New Haven Novelty..... 70¢70¢5¢
New Haven Ratchet..... 60¢5¢60¢10¢
Barber Ratchet..... 60¢5¢60¢10¢
Barber's..... 60¢5¢
Spofford..... 60¢5¢60¢10¢
Osagood's Ratchet..... 40¢10¢50¢
P. S. & W. Co., Peck's Patent..... 60¢

Brackets—

Shelf, plain, Regular, list..... 65¢70¢
Sargent's list..... 60¢10¢70¢10¢
Shelf, fancy, Sargent's list..... 70¢70¢10¢
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Hens' Self-Inch..... 0 10 0x11
Basting..... \$ Per doz. \$4.50 5.50 6.50
New Haven..... 60¢
Wire Goods Co..... 65¢10¢
Morgan Odorless..... \$ doz \$12, 50¢

Buckets, Well—

Galvanized—
Hill's..... \$ doz 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad..... \$ doz 14 qt. \$4.25¢4.50
Helwig's Flat Iron Band..... \$3.75
Helwig's Wired Top..... \$ doz \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Butts—

Brass—

Wrought Brass..... 80¢80¢10¢
Cast Brass, Tiebout's..... 50¢
Cast Brass, Fast..... 33¢4¢10¢
Cast Brass, Loose Joint..... 33¢4¢10¢

Cast Iron—

Fast Joint, Narrow..... 50¢10¢50¢60¢
Fast Joint, Broad..... 50¢10¢40¢
Loose Joint..... 50¢10¢40¢
Loose Joint, Japanned..... 50¢10¢40¢
Loose Joint, Jap. with Acorns..... 50¢10¢40¢
Parliament Butts..... 50¢10¢40¢
Mayer's Hinges..... 40¢
Loose Pin, Acorns..... 50¢10¢40¢
Loose Pin, Acorns, Japanned..... 50¢10¢40¢
Loose Pin, Acorns, Japanned, Plated Tips..... 50¢10¢40¢

Wrought Steel—

Fast Joint, Narrow..... 75¢75¢
Fast Joint, Broad..... 75¢75¢
Loose Joint, Broad..... 75¢75¢
Table Butts, Back Flaps, &c..... 75¢75¢
Inside Blind, Regular..... 75¢75¢
Inside Blind, Light..... 75¢75¢
Loose Pin..... 50¢50¢10¢
Bronzed Wrought Butts..... 50¢50¢10¢

Calipers—See Compasses.

Calks, Toe—

Gautier, One Prong, Blunt..... 51¢4¢
Burke's One Prong, Blunt..... 51¢4¢
Burke's, Two Prong, Blunt..... 71¢4¢
Burke's, One Prong, Sharp..... 51¢4¢

Can Openers—See Openers, Can.

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co. \$ 1000
F. L. Waterproof, 1-10's..... 35¢37¢
E. B. Trimmed Edge, 1-10's..... 47¢50¢
E. B. Grad. Edge, Cent. Fire, 1-10's..... 47¢50¢
Musket, Waterproof, 1-10's..... 47¢50¢
G. D..... 27¢30¢
S. B. Genuine Imported..... 45¢
Eley's E. B..... 50¢50¢
Eley's D. Waterproof, Central Fire..... \$1.00

Primers—

Berdan Primers, \$1.00..... 25¢
B. L. Caps (Sturtevant Shells) \$1.00..... 25¢
All other Primers, \$1.20..... 25¢

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891..... 25¢

Carpet Stretchers—

See Stretchers, Carpet.

Carpet Sweepers—

See Sweepers, Carpet.

Cartridges—

Rim Fire Cartridges..... 50¢5¢10¢
Rim Fire Military..... 15¢25¢
Cent. Fire, Pistol and Rifle..... 25¢25¢10¢
Cent. Fire, Military and Sporting..... 15¢25¢
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., \$1.75..... 25¢
Blank Cartridges, 32 cal., \$2.50..... 25¢
Primed Shells and Bullets..... 15¢5¢25¢
B. B. Caps, Round Ball, \$1.75..... 25¢
B. B. Caps, Con. Ball, Swgd., \$2.00..... 25¢

Casters—

Bed..... Brass..... 55¢55¢10¢
Plate..... Others..... 60¢60¢10¢
Shallow Socket..... 40¢10¢
Deep Socket..... 40¢10¢
Yale Casters, low list..... 45¢
Yale, Gem..... 70¢
Martin's Patent (Phoenix) 45¢10¢50¢10¢
Payson's Anti-friction..... 70¢70¢10¢
Payson's Truck..... 60¢60¢10¢
Giant Truck Casters..... 35¢
Stationary Truck Casters..... 50¢10¢
Socket Truck Casters..... 50¢50¢10¢
Gwinner's Common Sense..... 50¢
Gwinner's Hercules..... 50¢

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic..... 5 ¢ pails \$ 2 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892..... 60¢60¢10¢
American Coil, in cask lots, 3-16 5-16 5-8 7-16 3-4 3-8 \$7.60 5.30 4.45 5.50 3.65 3.50 3.40 3.30
Less than cask lots, add 10¢ per 100 lbs.
German Coil, list July 12, 1892..... 60¢60¢5¢
German Halter Chain, list July 12, 1892..... 60¢60¢5¢
Covert Halter..... 50¢25¢
Covert Traces..... 35¢25¢
Covert Heel Chain..... 50¢25¢
Onelda Halter Chain..... 60¢60¢25¢
Galvanized Pump Chain..... \$ 5¢4¢
Jack Chain, Iron..... 80¢10¢
Jack Chain, Brass..... 50¢

Chalk—

White, case lots..... \$ gr 50¢; small lots, 50¢
Red, case lots..... \$ gr 07¢ small lots, 70¢
Blue, case lots..... \$ gr 75¢; small lots, 80¢
See also Crayons

Chalk Lines—See Lines.
Chisels—
Socket Framing and Firmer
 P. S. & W. 75¢10¢75¢10¢5¢
 New Haven
 Witherby
 Mix
 Ohio Tool Co.
 Douglass 75¢75¢5¢
 Buck Bros. 30¢
 Merrill 60¢10¢60¢10¢5¢
 L. & J. White 30¢50¢5¢

Tanged and Miscellaneous.
 Tanged Firmers 40¢10¢50¢
 Butchers' \$4.75¢5.00
 Spear & Jackson s. \$5 to \$2
 Buck Bros. 30¢
 Cold Chisels, # 15 to 18¢

Chucks—
 Beach Pat. each, \$8.00 20¢
 Morse's Adjustable, each, \$7.00, 20¢20¢5¢
 Danbury each, \$5.00, 30¢30¢5¢
 Syracuse, Balz Pat. 25¢
 Graham Patent 33¢4¢
 Skinner's Patent Chucks 33¢4¢
 Combination Lathe Chucks 33¢4¢
 Universal Lathe Chucks 40¢
 Independent Lathe Chucks 40¢
 Drill Chucks 15¢
 Union Mfg. Co. \$3.50, 25¢
 Victor 40¢
 Combination 40¢
 Universal 40¢
 Independent 40¢

Churns—
 Timm Union, each, 5 gal. \$3.25; 7 gal. \$3.75; 10 gal. \$4.25.
 McDermid's Star Barrel Churn, each 6 gal. \$2.50; 10 gal. \$2.75; 15 gal. \$3.00; 20 gal. \$3.25.

Clamps—
 R. I. Tool Co.'s Wrought Iron 25¢
 Adjustable, Cincinnati 15¢10¢
 Adjustable, Hammers 15¢15¢5¢
 Adjustable, Stearns' 30¢30¢10¢
 Stearns' Adjustable Cabinet and Corner 30¢30¢10¢
 Cabinet, Sargent's 70¢10¢
 Carriage Makers' Sargent's 75¢75¢5¢
 Carriage Makers' P. S. & W. Co. 40¢10¢
 Eberhard Mfg. Co. 40¢5¢40¢10¢
 Warner's 40¢10¢40¢10¢5¢
 Saw Clamps, see Vises, Saw Filers' 25¢10¢
 Carpenter's, Cincinnati 25¢10¢

Cleavers, Butchers'—
 Bradley s. 25¢30¢
 L. & J. White 20¢5¢
 Healy's 40¢40¢5¢
 New Haven Edge Tool Co.'s 40¢
 P. S. & W. 35¢5¢35¢5¢10¢
 Foster Bros. 40¢40¢5¢
 Schulte, Lohoff & Co. 40¢40¢5¢

Clips—
 Norway, Axle, 1/4 & 5-16 55¢5¢5¢
 2d grade Norway Axle, 1/4 & 5-16 65¢5¢
 Superior Axle Clips 60¢5¢5¢70¢
 Norway Spring Bar Clips, 5-16 60¢5¢5¢
 Wrought Iron Felloe Clips # 15, 5¢
 Steel Felloe Clips # 15, 5¢
 Baker Axle Clips 25¢

Cloth and Netting, Wire—
 See Wire, etc.

Cockeyes— 50¢

Cocks Brass—
 Hardware list 60¢2¢

Coffee Mills—See Mills, Coffee.

Collars, Dog—
 Chapman Mfg. Company 50¢10¢60¢
 Medford Fancy Goods Co. 40¢10¢50¢
 Embossed, Gift, Pope & Steven's list, 30¢10¢

Combs, Curry—
 Leather, Pope & Steven's list 40¢
 Brass, Pope & Steven's list 40¢

Combs, Curry—
 Fitch's 50¢10¢50¢10¢10¢
 Rubber, per doz. \$10.00 25¢
 American Curry Comb Co. 25¢
 Kohler's Magic Oscillating # doz., \$2.00
 Kohler's Humane # doz., \$1.75

Compasses, Dividers, &c.—
 Compases, Callipers, Dividers, 70¢70¢10¢
 Bemis & Call Co.'s 50¢5¢
 Dividers 50¢5¢
 Compases 50¢5¢
 Callipers, Wing and Inside or Outside 50¢5¢
 Callipers, Double 50¢5¢
 Callipers, Call's Patent Inside 30¢
 Excelsior 25¢10¢
 J. Stevens & Co.'s 25¢10¢
 Starrett's 25¢10¢
 Spring Callipers and Dividers 25¢10¢
 Lock Callipers and Dividers 25¢
 Combination Dividers 25¢

Coopers' Tools—
 See Tools, Coopers'.

Cord—

Sash—
 Common # 10, 10¢11¢
 Patent, good quality # 12, 12¢12¢
 White Cotton Braided, fair, # 12, 24¢25¢
 Common Russia Sash # 12, 12¢13¢
 Patent Russia Sash # 12, 14¢
 Cable Laid Italian Sash # 21, 22¢
 India Cable Laid Sash # 12, 12¢
 Silver Lake
 A quality, White, 50¢ 25¢
 A quality, Drab, 50¢ 25¢
 B quality, White, 30¢ 10¢
 B quality, Drab, 35¢ 10¢
 Sylvan Spring, Extra Braided, White, 34¢
 Sylvan Spring, Extra Braided, Drab, 39¢
 Semper Idem, Braided, White, 27¢28¢
 Egyptian, India Hemp, Braided 26¢
 Massachusetts, White 29¢

Braided, White Cotton # 12, 37¢

Braided, Drab Cotton # 12, 42¢

Braided, Italian Hemp # 12, 40¢

Braided, Lnen # 12, 56¢

Tate's Cotton Braided, White, # 12, 28¢10¢

Cosman Mills—

Braided, Giant, White, # 30, 30¢

Braided, Giant, Drab and Fancy, # 30, 30¢

Braided, Crown, White, # 50, 50¢

Braided, Crown, Drab and Fancy, # 50, 50¢

Twist Drills—

Cleveland 50¢10¢10¢

Diamond, W. & B. 50¢10¢10¢

Graham's Pat. Groove Shank, 50¢10¢10¢

Morse 50¢10¢10¢

New Process 50¢10¢10¢

Standard 50¢10¢10¢

Syracuse (Meta list) 50¢10¢

Wire Picture—
 Braided or Twisted 80¢5¢80¢15¢
Corkscrews—See Screws, Cork.
Corn Knives and Cutters—
 See Knives, Corn.

Crackers, Nut—
 Table (H. & B. Mfg. Co.) 40¢
 Blake's Pattern, # doz., \$2.00 10¢
 Turner & Seymour Mfg. Co. 50¢
 Acme
 Japanned, # gro., \$30 50¢
 Nickel Plated, # gro., \$30 10¢

Cradles—
 Grain 50¢5¢2¢50¢10¢2¢

Crayons—
 White Crayons, # gross 7¢8¢
 D. M. Stewart Mfg. Co. Metal Work-ers, # gross, \$2.50 25¢
 D. M. Stewart Mfg. Co., Rolling Mill, # gross, \$2.50 25¢
 See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—
 See Combs, Curry.

Curtain Pins—
 See Pins, Curtain.

Cutters—

Meat—

Dixon's, # doz. 40¢5¢

Nos. \$14.00 \$17.00 \$19.00 \$30.00

Woodruff's, # doz. 40¢5¢

Nos. 100 150

Hale's Pattern, # doz. \$15.00 \$18.00

Nos. \$27.00 \$33.00 \$45.00

American 30¢

Nos. 1 2 3 4 5 6

Each \$5 \$7 \$10 \$25 \$50 \$60

Enterprise 30¢

Nos. 10 12 22 32 42

Each \$3 \$2.50 \$4 \$6 \$15

Great American Meat Cutter, 30¢30¢5¢

Nos. 112 116 118 120 122

Each \$2.75 \$3.00 \$3.50 \$4.00

Miles' Challenge, # doz. \$4.50 \$5.00

Nos. 1 2 3

Home No. 1, # doz. \$26.00 \$40.00

Draw Cut, each: \$55¢10¢

Nos. 5 2 6 8

\$50 \$75 \$80 \$225 20¢25¢

Beef Shavers (Enterprise) 30¢

Little Giant (P. S. & W. Co.) 50¢

Chadborn's Smoked Beef Cutter, # doz. \$66.00

Tobacco 20¢10¢30¢

All Iron # doz., \$4.25

Nashua Lock Co.'s, # doz., \$18.00, 50¢55¢

Wilson's 55¢

Sargent's # doz., \$24.00, 55¢10¢

Acme # doz., \$20.00, 40¢

Washer—

Smith's Pat. # doz., \$12.00, 20¢10¢10¢

Johnson's # doz., \$11.00, 33¢

Penny's, # doz., Pol. \$14; Jap'd, \$16, 55¢

Appleton's, # doz., \$16.00, 60¢10¢

Bonney's, # doz., 60¢10¢

Cincinnati 25¢10¢

Dampers, &c.—

Dampers, Buffalo 40¢10¢

Buffalo Damper Clips 40¢10¢

Crown Damper 40¢

Excelsior 40¢10¢

Diggers, Post Hole, &c.—

Samson, # doz., \$34.00 25¢25¢10¢

Fletcher Post Hole Augers, # doz., \$36.00, 20¢20¢10¢

Eureka Diggers, # doz., \$11.50, \$12.50

Leed's, # doz., \$8.00, \$9.00

Vaughan's Post Hole Auger, # doz., \$8.50, \$9.50

Kohler's Little Giant, # doz., \$18.00

Kohler's Hercules, # doz., \$14.00

Kohler's Invincible, # doz., \$12.00

Kohler's New Champion, # doz., \$18.00

Scheidler, # doz., \$18.00

Ryan's Post Hole Diggers, # doz., \$24.00

Cronk's Post Bars, # doz., \$60.00, 50¢50¢10¢

Gibbs' Post Hole Digger, # doz., \$15.00

Gibbs' National, # doz., \$12.00

Gibbs' Columbia, # doz., \$13.00

Gibbs' Imperial, # doz., \$7.00

Shimer's Hollow Handle, # doz., \$24.00, 50¢

Drill Bits or Bit Stock
Drills—See Augers and Bits.
Drill Chucks—See Chucks.
Dripping Pans—
 See Pans, Dripping.

Drivers, Screw—

Douglas Mfg. Co. 20¢20¢10¢

Disston's 50¢

Buck Bros. & L. Co.'s 30¢

Stanley R. & L. Co.'s 65¢10¢

No. 64, Varnished Handles 70¢10¢

Sargent & Co.'s 60¢10¢10¢

No. 1, Forged Blade 60¢10¢10¢

Nos. 20, 40 and 60 60¢10¢10¢

Knapp & Cowles 70¢

No. 1 60¢20¢70¢

No. 2 60¢10¢10¢70¢5¢

No. 3 60¢5¢60¢10¢

Nos. 4 and 00, Acme and Ideal 50¢5¢6¢

Stearns' 50¢10¢5¢

Gay & Panzer 25¢10¢5¢

Champion 25¢10¢

Clark's Pat. 30¢33¢

Crawford's Adjustable 30¢

Ellrich's Socket and Ratchet, 25¢25¢10¢

Allard's Spiral, new list, 25¢

Kolb's Common Sense, # doz., \$6.00, 25¢10¢

Syracuse Screw-Drive Bits, 30¢30¢5¢

Screw Driver Bits, # doz., 50¢75¢

Screw Driver Bits, Parr's, # gross, \$6.25

Fray's Hol. H'dle Sets, No. 3, \$12.00, 45¢

P. D. & Co.'s All Steel 50¢

Cincinnati 25¢10¢

Brace Screw Drivers 25¢10¢

Buck Bros' Screw Driver Bits, 27¢5¢

Goodell's Automatic 50¢

Mayhew's Black Handle 50¢

Mayhew's Monarch 45¢10¢

C. T. Williamson Wire Novelty Co. 50¢

Egg Beaters—See Beaters, Egg

Egg Poachers—
 See Poachers, Egg.

Electric Bell Sets—
 See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF.

40 gr. 100 gr. F.F.F.

1/4 kegs, # 40¢ 5¢ 24¢

1/2 kegs, # 40¢ 5¢ 24¢

10-# cans, 10 6 6 1/2 5¢

In case 6 6 1/2 5¢

10-# cans, less than 10 10 6 1/2 5¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—
 See Pins, Escutcheon.

Escutcheons—

Door Locks, Same dia. as Door Locks, 60¢10¢10¢

Brass Thread 60¢10¢10¢

Wood 25¢

Expanded Metal—
 List No. 5.

Lathing 10¢

Fencing, Painted Sheets 20¢

Netting, Painted Sheets 20¢

Door Mats, Galvanized 25¢

Window Guards, Paneled 15¢

Tree Guards, Paneled 15¢

Extractors, Lemon Juice—
 See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, # doz., \$1.00 20¢20¢10¢

Van Sand's Screw Pat. \$15 # gr. 60¢10¢

Van Sand's Old Pat., \$15 # gr. 55¢10¢

Austin & Eddy No. 2008 # gr., \$9.00

Security Gravity # gr., \$9.00

Zimmerman's 50¢

Faucets—

Fenn's 40¢

Bohren's Pat. Rubber Ball 25¢

Fenn's Cork Stops 33¢5¢

Frary's Pat. Petroleum 60¢

B. & L. B. Co. 50¢

West's Lock, Open and Shut Key, 50¢

Star, Metal Plug, new list, 40¢

Lockport, Metal Plug, reduced list, 60¢

Fixtures, Grindstone—
 Sargent's Patent 70¢10¢
 Reading Hardware Co. 30¢10¢
 P. S. & W. Co. 50¢10¢

Fluting Machines—
 See Machines, Fluting.

Fluting Scissors—

Halters—

Covert's Rope, Jute.....	60¢10¢10¢25¢
Covert's Rope, 7-16-in. Jute.....	70¢25¢
Covert's Rope, 1/4-in. Hemp.....	50¢25¢
Covert's Adl. Rope Halters.....	40¢25¢
Covert's Hemp Horse and Cattle Tie.....	50¢10¢25¢
Covert's Jute Horse Ties.....	70¢25¢
Covert's Jute Cattle Ties.....	70¢10¢25¢
Covert's Adl. Web Halters.....	35¢5¢25¢
Covert's Saddlery Works Halters.....	30¢25¢
Covert's Saddlery Works Horse and Cattle Ties.....	33¢25¢

Hammers—**Handled Hammers—**

Maydole's, list Dec. 1, '85.....	25¢10¢35¢
Buffalo Hammer Co.....	50¢10¢
Humason & Beckley.....	50¢10¢
Atha Tool Co.....	50¢10¢
Verree.....	40¢10¢
C. Hammond & Son.....	40¢10¢
Fayette R. Plumb.....	40¢10¢
Artisan's Choice, A. E. Nail.....	40¢10¢
Regular Y. & P. A. E. Nail.....	50¢
Horsehoe Turning Hammers.....	50¢
Other Hammers.....	50¢10¢
Cheney's Claw.....	40¢10¢
Cheney's Machinist's & Riveting.....	50¢5¢
Magnetic Tack, Nos. 1, 2, 3, 1 1/2, 1 1/4.....	30¢10¢
Nelson Tool Works.....	40¢10¢
Warner & Nobles, new list.....	25¢10¢
Peck, Stow & Wilcox.....	40¢10¢50¢
Sargent's.....	40¢10¢50¢

Heavy Hammers and Sledges—

8 lb and under.....	75¢10¢75¢10¢
8 to 10 lb.....	85¢
Over 10 lb.....	10¢10¢11¢
Wilkinson's Smiths.....	10¢10¢11¢

Handcuffs and Leg Irons—

—See Police Goods.

Handles—**Cross-Cut Saw Handles—**

Atkins' No. 1 Loop, wpr., 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4, Reversible, 18¢.	
Champion.....	15¢
Ely's Perfection.....	15¢
Ely's Perfection.....	15¢
Ely's Perfection.....	15¢

Iron, Wrought or Cast—

Door or Thumb.....	
Nos. 0 1 2 3 4	
Per doz.....	0.90 1.00 1.08 1.35 1.50
Roggin's Latches.....	60¢10¢10¢
Bronze Iron Drop Latches.....	70¢
Jap'd Store Door Handles—Nuts, \$1.02; Plate, \$1.10; no plate, \$0.88.....	1.10
Barn Door, wpr. doz \$1.40.....	1.40
Chest and Lifting.....	70¢70¢10¢

Wood—

Saw and Plane.....	40¢10¢50¢
Hammer, Hatchet, Axe, &c.....	40¢10¢50¢
Brad Axl.....	40¢10¢50¢
Hickory Firmer Chisel, ass'd.....	40¢10¢50¢
Hickory Firmer Chisel, large.....	40¢10¢50¢
Apple Firmer Chisel, ass'd.....	40¢10¢50¢
Apple Firmer Chisel, large.....	40¢10¢50¢
Socket Firmer Chisel, ass'd.....	40¢10¢50¢
Socket Framing Chisel, ass'd.....	40¢10¢50¢
J. B. Smith & Co.'s Pat File.....	50¢
File, assorted.....	50¢
Auger, assorted.....	50¢
Auger, large.....	50¢
Pat. Auger, Ives.....	30¢10¢
Pat. Auger, Douglass.....	30¢10¢
Pat. Auger, Swan.....	30¢10¢
Hoe, Rake, Shovel, &c.....	60¢60¢25¢

Hangers—

Barn Door, old patterns.....	60¢10¢10¢70¢
Barn Door, New England.....	60¢10¢10¢70¢
Samson Steel Anti-Friction.....	55¢
Orleans Steel.....	55¢
Hamilton Wrought Steel Track.....	55¢
U. S. Wood Track.....	55¢
Champion.....	60¢10¢
Rider and Wooster, Medina Mfg. Co.'s list.....	70¢
Climax Anti-Friction.....	55¢
Climax Anti-Friction for Wood Track.....	55¢
Zenth for Wood Track.....	55¢
Read's Steel Arm.....	50¢
Challenge, Barn Door.....	50¢
Sterling.....	50¢50¢10¢
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....	50¢25¢
Cheritree.....	50¢10¢
Kidder's.....	40¢10¢50¢
Boss.....	60¢10¢
Best Anti-Friction.....	60¢10¢
Duplex (Wood Track).....	60¢10¢50¢
Terry's Pat., wpr. doz pr. 4 in., \$10.00; 5 in., \$12.00.....	50¢10¢
Terry's Steel Anti-Friction Leader.....	50¢10¢
Terry's Steel Anti-Friction Ideal.....	50¢10¢
Cronk's Patent, Steel Covered.....	50¢50¢
Wood Track Iron Clad, wpr. ft. 10¢.....	50¢
Carrier Steel Anti-Friction.....	45¢
Architect, wpr. set \$6.00.....	20¢
Eclipse.....	20¢10¢
Felix, wpr. set \$4.50.....	20¢
Richards.....	20¢
Lane's New Standard.....	50¢50¢50¢
Lane's Standard.....	50¢50¢50¢10¢
Lane's Parlor.....	40¢
Ball Bearing Door Hanger.....	20¢10¢25¢10¢
Warner's Pat.....	20¢10¢25¢10¢10¢
Stearns' Anti-Friction.....	20¢10¢25¢10¢10¢
Stearns' Challenge.....	25¢10¢25¢10¢10¢
Faultless.....	40¢40¢50¢
American, per set \$6.00.....	20¢10¢
Rider & Wooster, No. 1, 62¢; No. 2, 75¢.....	40¢
Paragon, Nos. 1, 2 and 3.....	40¢10¢
Cincinnati.....	25¢10¢
Paragon, Nos. 5, 6, 7 and 8.....	30¢10¢
Prescent.....	60¢60¢10¢
Nickel, Steel, Nos. 0, 25; 1, 20; 2, 15.....	20¢10¢
Scranton Anti-Friction Single Strap.....	33¢45¢
Wild West, 21-in. Wheel, \$15.00; 5 in. Wheel, \$21.00.....	45¢
Star.....	40¢10¢40¢10¢50¢
May.....	50¢50¢50¢10¢
Barry, \$6.00.....	40¢10¢
Interstate.....	50¢
Magie.....	45¢
Pendulum, Payson's.....	40¢
Moody.....	45¢

Harness Snaps—See Snaps.**Hatchets—**

American Axe and Tool Co.	
Blood's.....	50¢10¢10¢
Hunt's.....	50¢10¢10¢
Mann's.....	50¢10¢10¢
Peck's.....	50¢10¢10¢
Underhill's.....	40¢10¢
Buffalo Hammer Co.....	50¢50¢
Fayette R. Plumb.....	50¢50¢
C. Hammond & Son.....	50¢50¢
Sargent's & Co.....	50¢50¢
P. S. & W. Co.....	10¢
Ten Eyck Edge Tool Co.....	10¢
Collins.....	50¢50¢50¢
Schulte, Lohoff & Co.....	50¢50¢50¢

Hay and Straw Knives—

—See Knives.

Hinges—**Blind Hinges—**

Parker.....	75¢25¢
Huffer.....	80¢
Clark's, Nos. 1, 3, 5, 40 and 50.....	80¢80¢50¢
Clark's Mortise Gravity.....	50¢
Sargent's, Nos. 1, 3, 5, 11, 12, 13, 75¢70¢10¢	75¢10¢
Reading's Gravity.....	75¢10¢75¢10¢50¢
Shepard's.....	75¢10¢
Noiseless.....	75¢10¢
Niagara.....	80¢
Buffalo.....	80¢
Clark's Genuine Pattern.....	80¢
O. S. Lull & Porter.....	75¢10¢
Acme, Lull & Porter.....	75¢
Queen City Reversible.....	70¢10¢50¢75¢
Clark's, Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3.....	75¢10¢25¢
North's Automatic Blind Fixtures, No. 2, for Wood, \$6.00; No. 3, for Brick, \$11.50.....	10¢

Gate Hinges—

Western.....	10¢
N. E.....	10¢
N. E. Reversible.....	10¢
Clark's, Nos. 1, 2, 3.....	10¢
N. Y. State.....	10¢
Automatic.....	10¢
Shepard's.....	10¢

Spring Hinges—

Geer's Spring and Blank Butts.....	40¢
Union Spring Hinge Co.'s list.....	20¢
March, 1886.....	20¢
Barker's Double Acting.....	25¢
Union Mfg. Co.....	25¢
Bommer's.....	30¢
Buckman's.....	10¢20¢
Chicago.....	30¢
Bardley's Patent Checkling.....	15¢
Acme.....	15¢
U. S.....	25¢10¢
Empire and Crown.....	20¢
Hero and Monarch.....	25¢
American, Gem and Star.....	20¢
Oxford.....	20¢
Covell.....	60¢
Reliable.....	60¢
Champion.....	60¢
No. 10 Matchless.....	60¢
No. 25 Unbreakable.....	60¢
J. G. C. Covered, wpr. gro., \$30.....	50¢50¢
Samson.....	50¢50¢
Wheeler's No. 1, wpr. gro., \$16; No. 2.....	13¢
Devore, No. 1.....	13¢
Rex.....	13¢
Freeport.....	13¢

Wrought Iron Hinges—

Strap and T.....	50¢10¢50¢10¢50¢
Corrugated Strap and T.....	50¢10¢50¢
Screw Hook and (6 to 12 in., wpr. 4¢; 14 to 20 in., wpr. 3 1/2¢; 22 to 30 in., wpr. 3¢; 34 in., wpr. 7 1/2¢; 36 in., wpr. 5 1/2¢; 38 in., wpr. 4 1/2¢)	4¢
Screw Hook and Eye.....	3 1/2¢
Roller Blind Hinges, Nos. 32 and 34.....	50¢10¢
Roller Blind Hinges, Nos. 232 and 234.....	50¢10¢
Roller Plate.....	70¢10¢
Roller Raised.....	70¢10¢
Plate Hinges (8, 10 & 12 in., wpr. 5¢; "Providence" 1 over 12 in., wpr. 4¢)	5¢

Hoes—

D. & H. Scovill.....	20¢
Lane's Crescent, Planters' Pattern.....	45¢50¢
Lane's Razor Blade, Scovill Pattern.....	30¢
Maynard, S. & O. Pat.....	45¢50¢
Sandusky Tool Co., S. & O. Pat.....	70¢70¢
Am. Axe and Tool Co., S. & O. Pat.....	5¢
Chattanooga Tool Co., S. & O. Pat.....	60¢
Grub.....	60¢10¢

Handled—

Garden, Mortar, &c.....	70¢70¢50¢25¢
Planter's Cotton, &c.....	70¢70¢50¢25¢
Warren Hoe.....	60¢60¢50¢
Magie.....	10¢40¢

Hog Rings and Ringers—

—See Rings and Ringers—

Hoisting Apparatus—

—See Machines, Hoisting.

Hollow-Ware—

—See Ware, Hollow.

Holders—**Bag—**

Sprengle's Pat.....	10¢
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Bit—

Extension.....	40¢40¢10¢
Barber's, wpr. doz \$15.00.....	40¢40¢10¢
Ives, wpr. doz \$20.00.....	60¢50¢60¢10¢
Dagonal.....	10¢24¢40¢
Angular.....	10¢24¢40¢50¢

File and Tool—

Balz Pat.....	10¢
Nicholson File Holders.....	20¢
Dick's Tool Holder.....	20¢

Hooks—**Cast Iron—**

Bird Cage, Sargent's List.....	60¢10¢10¢
Clothes Line, Sargent's List.....	60¢10¢10¢

Clothes Line, Reading list.

Ceiling, Sargent's list.....	60¢10¢40¢10¢10¢
Harness, Reading list.....	55¢10¢55¢10¢10¢
Coat and Hat, Sargent's list.....	55¢10¢60¢10¢
Coat and Hat, Reading.....	50¢10¢50¢10¢10¢
Cotton.....	10¢125¢
Cotton Pat. (N. Y. Mallet and Handle Wks.....	30¢
Tassel and Picture, T. & S. Mfg. Co.....	50¢
Wrought Staples, Hooks, &c.....	See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....	60¢60¢10¢
Wire Coat and Hat, Miles, list April, 1886.....	50¢50¢10¢
Indestructible Coat and Hat.....	45¢45¢50¢
Wire Coat and Hat, Standard.....	60¢60¢10¢
Handy Hat and Coat.....	50¢10¢60¢
Steady Ceiling Hooks.....	50¢10¢60¢
Belt.....	80¢15¢80¢20¢
Atlas, Coat and Hat.....	60¢60¢10¢
Williams's Bird Cage Hooks, list April, 1892.....	40¢
Bright Wire Goods—See Wire.	

Miscellaneous—

Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25	
Noll's Grass.....	10¢25¢
Bush.....	55¢60¢
Whiffletree Patent.....	55¢
Hooks and Eyes—Malleable Iron.....	70¢70¢10¢
Hooks and Eyes—Brass.....	60¢10¢10¢
Fish Hooks, American.....	50¢
Bench Hooks—See Bench Stops.	

Horse Nails—See Nails, Horse**Horse Shoes—**

—See Shoes, Horse.

Hose, Rubber—

Competition.....	75¢75¢10¢50¢
Standard.....	60¢10¢10¢40¢
Extra.....	60¢60¢10¢
N. Y. B. & P. Co., Para.....	25¢50¢
N. Y. B. & P. Co., Extra.....	40¢40¢50¢
N. Y. B. & P. Co., Dundee.....	50¢10¢60¢

Huskers—

Blair's Adjustable.....	10¢8.00
Blair's Adjustable Clipper.....	7.00
Hubbard's Solid Steel.....	4.50

Indurated Fiber Ware—

—See Ware, Indurated Fiber.

Irons.**Sad—**

From 4 to 10, at factory.....	100¢
Self-Heating.....	2.30¢2.40
Self-Heating Tailors'.....	10¢8.00
Mrs. Pott's Irons, list June 1, 1892.....	30¢
Enterprise Star Irons, list June 1, 1892.....	30¢
Crown.....	60¢10¢60¢10¢50¢
Ideal Irons, new list.....	50¢10¢50¢10¢10¢
Salamanca Irons.....	25¢
B. B. Sad Irons, wpr. doz.....	3.34¢
Combined Fluter and Sad Iron, wpr. doz.....	15¢
Fox Reversible Self-Fluter, wpr. doz.....	2.40
Chinese Laundry (N.E. Butt Co.).....	8.5¢
New England.....	15¢
Mahony's Troy Pol. Irons.....	5¢
Sensible, list Jan. 91.....	50¢10¢50¢
Sensible Tailor's Irons.....	33¢
National Self-Heating.....	30¢

Soldering—

Soldering Coppers.....	10¢19¢21¢
Covert's Adjustable, list Jan. 1, 1886.....	35¢25¢

Pinking—

Pinking Irons, wpr. doz.....	55¢60¢
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Jack Screws—See Screws.**Jacks, Wagon—**

Daisy.....	33¢45¢
Victor.....	33¢45¢
Lockport.....	40¢

Kettles—

Brass, Spun, Plain, list Jan. 1, '91.....	25¢50¢
Brass, Spun, Pld. Malt, list Jan. 1, '91.....	20¢
Enameled and Tea—See Ware, Hollow.	

Keys—

Lock, Ass'n list Dec. 30, 1886.....	50¢10¢
Eagle, Cabinet, &c.....	30¢50¢
Hotchkiss' Brass Blanks.....	40¢
Hotchkiss' Copper and Tinned.....	40¢
Hotchkiss' Pad. and Cab.....	35¢
Ratchet Bed Keys.....	10¢40¢, 15¢
Wollensak Tinned.....	50¢10¢

Knife Sharpeners—

—See Sharpeners, Knife.

Knives—**Butcher, Shoe, &c.**

Wilson's Butcher Knives, list Dec. 8, 1890.....	25¢
Ames' Butcher Knives.....	25¢
Foster Bros' Butcher, &c.....	40¢
Jordan's A.A. All Butchers', list.....	40¢
Nichols' Butcher Knives.....	40¢10¢
W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.80, &c.....	20¢25¢
Ames' Shoe Knives.....	15¢20¢
Ames' Bread Knives, 7 doz \$1.50, 15 doz 20¢	20¢20¢10¢
Moran's Shoe and Bread.....	20¢20¢10¢
Hay and Straw—See Hay Knives.	
Table and Pocket—See Cutlery.	

Brittan, Graham & Mathes, list Jan. 1890.....	60¢10¢10¢
Perkins Burglar Proof.....	60¢25¢
Plate.....	33¢42¢
Barnes Mfg. Co.....	40¢40¢10¢
Deitz Flat Key.....	30¢
L. & C. Round Key Latches.....	30¢10¢
L. & C. Flat Key Latches.....	33¢42¢
Romer's Night Latches.....	15¢
Brooklyn Latches.....	50¢10¢
Shepardson or U. S.....	35¢
Seed's N. Y. Hasp Lock.....	25¢

Padlocks—

List June 10, 1891.....	50¢2¢
Norwich Lock Mfg. Co., old list.....	50¢2¢
Yale Lock Mfg. Co.'s.....	net prices
Waste.....	40¢2¢
Eureka, Eagle Lock Co.....	40¢2¢
Romer's Nos. 0 to 91.....	30¢
Romer's Scandinavian, &c., Nos. 100 to 105.....	15¢
A. E. Deitz.....	40¢
Champion Padlocks.....	40¢
Hotchkiss.....	40¢
Star.....	60¢
Horsehoe.....	40¢40¢10¢
Barnes Mfg. Co.....	40¢40¢10¢
No. 11.....	30¢
No. 12.....	30¢
No. 13.....	30¢
No. 14.....	30¢
No. 15.....	30¢
No. 16.....	30¢
No. 17.....	30¢
No. 18.....	30¢
No. 19.....	30¢
No. 20.....	30¢
No. 21.....	30¢
No. 22.....	30¢
No. 23.....	30¢
No. 24.....	30¢
No. 25.....	30¢
No. 26.....	30¢
No. 27.....	30¢
No. 28.....	30¢
No. 29.....	30¢
No. 30.....	30¢
No. 31.....	30¢
No. 32.....	30¢
No. 33.....	30¢
No. 34.....	30¢
No. 35.....	30¢
No. 36.....	30¢
No. 37.....	30¢
No. 38.....	30¢
No. 39.....	30¢
No. 40.....	30¢
No. 41.....	30¢
No. 42.....	30¢
No. 43.....	30¢
No. 44.....	30¢
No. 45.....	30¢
No. 46.....	30¢
No. 47.....	30¢
No. 48.....	30¢
No. 49.....	30¢
No. 50.....	30¢
No. 51.....	30¢
No. 52.....	30¢
No. 53.....	30¢
No. 54.....	30¢
No. 55.....	30¢
No. 56.....	30¢
No. 57.....	30¢
No. 58.....	30¢
No. 59.....	30¢
No. 60.....	30¢
No. 61.....	30¢
No. 62.....	30¢
No. 63.....	30¢
No. 64.....	30¢
No. 65.....	30¢
No. 66.....	30¢
No. 67.....	30¢
No. 68.....	30¢
No. 69.....	30¢
No. 70.....	30¢
No. 71.....	30¢
No. 72.....	30¢
No. 73.....	30¢
No. 74.....	30¢
No. 75.....	30¢
No. 76.....	30¢
No. 77.....	30¢
No. 78.....	30¢
No. 79.....	30¢
No. 80.....	30¢
No. 81.....	30¢
No. 82.....	30¢
No. 83.....	30¢
No. 84.....	30¢
No. 85.....	30¢
No. 86.....	30¢
No. 87.....	30¢
No. 88.....	30¢
No. 89.....	30¢
No. 90.....	30¢
No. 91.....	30¢
No. 92.....	30¢
No. 93.....	30¢
No. 94.....	30¢
No. 95.....	30¢
No. 96.....	30¢
No. 97.....	30¢
No. 98.....	30¢
No. 99.....	30¢
No. 100.....	30¢

Sash. &c.—

Clark's No. 1, \$10; No. 2, \$8 gr.....	33¢4¢
Ferguson's.....	33¢
Victor.....	60¢10¢2¢
Walker's.....	10¢
Attwell Mfg. Co.....	25¢33¢4¢
Reading.....	60¢10¢60¢10¢10¢
Hammond's Window Springs.....	40¢
Common Sense, Jap'd, Cop'd and Br'd.....	gr \$4.00
Common Sense, Nickel Plated.....	gr \$10.00
Universal.....	30¢
Kempshall's Gravity.....	60¢
Kempshall's Model.....	60¢60¢10¢
Corbin's Daisy, list Feb. 15, 1886.....	70¢
Payson's Perfect.....	60¢10¢10¢
Hugunin's Sash Balances.....	25¢25¢2¢
Hugunin's New Sash Locks.....	25¢25¢2¢
Stoddard's "Practical".....	10¢
Ives' Patent.....	60¢10¢60¢10¢5¢
Fish (Liesche's pat.), No. 100, gr, &c.....	No. 100, gr, \$10.
No. 105, gr, \$10.....	50¢
Dois, Bronze, Barnes Mfg. Co.....	70¢
Champion Safety, list January, 1890.....	40¢
Security.....	70¢
Giant, list Jan., 1892.....	70¢5¢
Wolcott's.....	60¢10¢5¢
Monarch.....	50¢

Lumber Tools—

See Tools, Lumber.

Lustro—

Four-ounce bottles.....	gr doz, \$1.75; gr gross, \$17.00
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Machines.**Boring—**

Without Augers. Upright. Angular.....	50¢
Douglas.....	50¢
Snell's, Rice's Pat.....	5.50 6.75 40¢10¢10¢
Jennings.....	5.50 6.75 45¢45¢10¢
Other Machines.....	2.35 2.75
Phillips' Patent with Auger.....	7.00 7.50
Miller's Falls.....	7.50 25¢

Fluting—

Knox, 4½-in. Rolls.....	\$3.25 each 35¢
Knox, 6-in. Rolls.....	\$3.00 each 35¢
Eagle, 3½-in. Rolls, \$2.15.....	35¢
Eagle, 5½-in. Rolls, \$2.85.....	35¢
Crown, 4½ in., \$3.50; 6 in., \$4.00; 8 in., \$4.50 each.....	35¢
Crown Jewel, 6 in.....	\$3.50 each 35¢
American, 5 in., \$3.00; 6 in., \$3.40; 7 in., \$4.00 each.....	35¢
Domestic Fluter.....	each, \$1.50
Geneva Hand Fluter, White Metal.....	gr doz \$12.25
Crown Hand Fluter, No. 1, \$15.00; 2, \$12.50; 3, \$10.00.....	30¢
Shepard Hand Fluter, No. 80, per doz.....	\$15.30 40¢
Shepard Hand Fluter, No. 110, gr doz.....	\$11.00 40¢
Shepard Hand Fluter No. 96, gr doz.....	\$8.00 40¢
Clark's Hand Fluter, gr doz \$15.00.....	35¢
Combined Fluter and Sad Iron.....	gr doz \$15.00 30¢
Buffalo, gr doz \$10.00.....	10¢

Holisting—

Moore's Hand Holist, with Lock Brake.....	20¢
Moore's Differential Pulley Block.....	40¢
Energy's Mfg. Co.'s.....	25¢
Bure Grip Steel Tackle Blocks.....	25¢

Washing—

Anthony Wayne, gr doz, No. 1, \$51; No. 2, \$45; No. 3, \$42.....	
Western Star, gr doz, No. 2, \$45; No. 2 \$48.....	
Weissell.....	gr doz \$54.00
Fair and Square.....	gr doz \$42.00

Mallets—

Hickory.....	20¢10¢20¢10¢10¢
Lignumvite.....	20¢10¢20¢10¢10¢
B. & L. Block Co., Hickory & L. V.....	30¢30¢10¢

Mattocks—Regular list.

60¢10¢60¢10¢25¢	
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Measures—

Standard Fiberware, No. 1, peck gr dozen, \$4; 1½ peck, \$3.50.	
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Meat Cutters—

See Cutters, Meat.

Menders, Harness—

Per doz.....	\$2.00
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Mills—**Coffee—**

Box and Side, list Jan. 1, 1888, 60¢10¢10¢	
Net prices are often made which are lower than above discount.	
American, Enterprise Mfg. Co.....	30¢
The Swift, Lane Bros.....	30¢

Mining Knives—

See Knives, Mining.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Philadelphia.....	60¢10¢
Pennsylvania and Continental.....	60¢
New Model and Excelsior.....	60¢60¢10¢
Other Machines.....	60¢10¢10¢75¢

Muzzles—

Safety.....	gr doz, \$3.00, 25¢
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Nails.—

Cut and Wire. See Trade Report.	
Wire Nails, Papered.	
Association list, May 1, 192, 80¢10¢10¢5¢	
Tack Mfrs. list.....	70¢5¢70¢10¢
Hungarian, Finishing, &c. See Tacks.	

Horse—

Nos. 6 7 8 9 10	
American.....	33¢ 54¢ 54¢ 54¢ .net
Ansable.....	28¢ 20¢ 20¢ 24¢ 25¢
Clinton, Fin. 10¢ 17¢ 16¢ 15¢ 14¢ 30¢10¢	
Ease.....	28¢ 26¢ 25¢ 24¢ 23¢
Lyra.....	10¢ 17¢ 16¢ 15¢ 14¢ 40¢10¢
Snowden.....	10¢ 17¢ 16¢ 15¢ 14¢ 40¢10¢
Vulcan.....	23¢ 21¢ 20¢ 19¢ 18¢ 40¢10¢
Northwest.....	23¢ 21¢ 20¢ 19¢ 18¢ 25¢25¢5¢
A. C.....	25¢ 23¢ 22¢ 21¢ 21¢
C. B. K.....	25¢ 23¢ 22¢ 21¢ 21¢
Maud S.....	25¢ 23¢ 22¢ 21¢ 21¢
Champion.....	23¢ 21¢ 20¢ 19¢ 18¢ 40¢10¢5¢
Saranac.....	23¢ 21¢ 20¢ 19¢ 18¢ 40¢10¢
Champion.....	25¢ 23¢ 22¢ 21¢ 20¢
Capewell.....	10¢ 18¢ 17¢ 16¢ 15¢ 10¢5¢
Anchor.....	23¢ 21¢ 20¢ 19¢ 18¢ 35¢
Western.....	23¢ 21¢ 20¢ 19¢ 18¢ 50¢
Empire Bronzed.....	13¢14¢ 1¢

Picture—

Brass Head, Sargent's list.....	60¢60¢10¢
Brass Head, Combination list.....	50¢10¢
Anchor.....	23¢ 21¢ 20¢ 19¢ 18¢ 40¢10¢
Porcelain Head, Combination list.....	40¢10¢
Niles' Patent.....	40¢

Nail Pullers—See Pullers, Nail.**Nail Sets—See Sets, Nail.****Nut Crackers—**

See Crackers, Nut.

Nuts—List Dec. 18, 1889.

Hot Pressed.....	Square. Hex.
Cold Punched.....	5.00 6.00 off list
In packages of 100 lb, add 1-10¢ lb, add 1¢ lb, net.	

Oakum—

Best or Government.....	gr 6¢ (7½¢)
U. S. Navy.....	gr 5¢ (6¢)
Navy.....	gr 5¢ (6¢)

Oilers—

Zinc and Tin.....	65¢10¢70¢5¢
Brass and Copper.....	50¢10¢50¢10¢5¢
Malleable, Hammers' Improver, No. 1.....	\$3.00; No. 2, \$4.00; No. 3, \$4.40 gr doz
Malleable, Hammers' Old Pattern, same list.....	10¢10¢5¢
Prior's Pat. or "Paragon" Zinc.....	60¢10¢10¢
Prior's Pat. or "Paragon" Brass.....	50¢
Olmstead's Tin and Zinc.....	60¢
Olmstead's Brass and Copper.....	50¢
Broughton's Zinc.....	60¢
Broughton's Brass.....	50¢
Gem, P. D. & Co.....	gr doz 50¢
Steel, Draper & Williams.....	50¢

Openers, Can—

Messenger's Comet.....	gr doz \$3.00, 25¢
American.....	gr gross \$2.75, \$3.00
Duplex.....	gr doz 25¢, 15¢20¢
Lyman's.....	gr doz \$3.75, 20¢
No. 4, French.....	gr doz \$2.25, 55¢60¢
No. 5, Iron Handle.....	gr gr \$6.00, 45¢50¢
Eureka, Hammers' Improver, No. 1.....	gr doz \$2.50, 10¢
Sardine Sissors.....	gr doz \$2.75, 30¢
Star.....	gr doz \$2.75
Sprague, No. 1, \$2.00; 2, \$2.25; 3, \$2.50.....	60¢70¢
Excelsior, No. 1 \$2.50; No. 2, \$1.50.....	40¢
World's Best, gr gross, No. 1, \$12.00.....	50¢10¢
Universal, gr doz \$3.00.....	55¢5¢
Domestic, gr doz \$2.00.....	45¢
Champion, gr doz \$2.00.....	50¢

Packing, Steam—**Rubber—**

Standard.....	70¢70¢10¢
Extra.....	60¢60¢5¢
N. Y. R. & P. Co., Standard.....	50¢
N. Y. R. & P. Co., Empire.....	60¢
N. Y. R. & P. Co., Salamander.....	25¢
Jenkins' Standard, gr 80¢.....	25¢25¢5¢

Miscellaneous—

American Packing.....	10¢11¢ 1¢
Russia Packing.....	14¢ 1¢
Italian Packing.....	13¢14¢ 1¢
Cotton Packing.....	15¢17¢ 1¢
Java.....	7¢8¢ 1¢

Pails—**Galvanized—**

Quarts 10 12 14	
Hill's Light Weight, gr doz.....	\$2.75 3.00 3.25
Hill's Heavy Weight, gr doz.....	3.00 3.25 3.75
Helwig's.....	2.50 2.75 3.00
Sidney Shepard & Co.....	2.55 2.85 3.05
Iron Clad.....	2.50 2.75 3.05
Fire Buckets.....	2.75 3.25 3.50
Buckets—See Well Buckets.	

Indurated Fiber Ware—25¢

Star Pails, 12 qt.....	gr doz \$5.40
Stable and Milk, 14 bt.....	gr doz \$6.00
Fire Pails, deep.....	gr doz \$5.40
Fire Pails, round bottom.....	gr doz \$7.80

Standard Fiber Ware—

Water Pails, 12 qt., gr doz.....	\$4.00 \$4.50
Dairy Pails, 14 qt., gr doz.....	4.50 5.00
Fire Pails, No. 1, 12 qt., gr doz.....	4.50 5.00
Fire Pails, No. 2, 14 qt., gr doz.....	5.00 5.50
Sugar Pails.....	6.00 6.50
Horse Pails.....	5.00 5.50
Buggy Pails.....	4.00 4.50
Slop Jars (bal. trap).....	8.00 9.00
Chamber Pails, 14 qt.....	6.50 7.50

Pans—**Dripping—**

Small sizes.....	gr 6½¢
Large sizes.....	gr 5½¢
Silver & Co. (Covered).....	40¢

Fry—

Standard List:	
No.....	1 2 3 4
gr doz.....	\$3.75 \$3.25 7 4.75 \$3.25
No.....	5 6 7 8
gr doz.....	\$6.00 \$7.00 \$8.00 \$9.00
Polished, regular goods.....	75¢75¢10¢
Acme Fry Pans.....	60¢5¢

Dust—

Steel Edge, No. 1.....	gr doz \$1.75
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Paper and Cloth—**Sand and Emery—**

List April 10, 1886.....	50¢10¢50¢10¢5¢
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Sibley's Emery and Crocus Cloth.....**Parers—****Apple—**

Advance.....	gr doz \$4.75
Baldwin.....	gr doz 5.25
Bonanza.....	each 5.00
Daisy.....	gr doz 4.00
Dandy.....	each 4.50
Eclipse.....	gr doz 4.25
Eureka, 1888.....	each 16.00
Family Bay State.....	gr doz 12.00
Favorite.....	gr doz 5.00
Gold Medal.....	gr doz 4.00
Ideal.....	gr doz 4.00
Improved Bay State.....	gr doz 27.00, 30.00
Little Star.....	gr doz 4.50
Monarch.....	gr doz 13.50
New Lightning.....	gr doz 5.50
Oriole.....	gr doz 4.00
Penn.....	gr doz 4.00
Perfection.....	gr doz 4.00
Pomona.....	gr doz 4.00
Rocking Table.....	gr doz 6.00
Turn Table.....	gr doz 4.50

Presses—**Fruit and Jelly—**

Enterprise Mfg. Co.	30%
Hemis.	dos \$3.50
Shepard's Queen City	dos \$3.50
Silver & Co.	dos \$2.75

Pruning Hooks and Shears—See Shears.**Pullers, Nail—**

Scranton	dos, \$18.00, 89¢
Curtis Hammer	dos, \$9.00
Giant, No. 1	dos, \$18.00, 10¢
Giant, No. 2	dos, \$15.00, 10¢
Pellcan	dos, \$9.00, 25¢
Ecipse	Each, \$2.00, net
Economy	dos, \$6.00

Pulleys—

Hot House, Awning, &c.	60¢@70¢
Japanned Screw	60¢@10¢
Brass Screw	70¢
Japanned Side	60¢@10¢
Japanned Clothes Line	60¢@10¢
Empire Sash Pulley	55¢@60¢
Moore's Sash, Anti-Friction	50¢
Hay Fork, Solid Eye	50¢@10¢@50¢@10¢
Hay Fork, "Anti-Friction," 5 in. solid	50¢
Hay Fork, "F" Common and Patent	50¢
Bushed	20¢
Hay Fork, Tarbox Pat. Iron	20¢
Hay Fork, Reed's Self-Lubricating	50¢
Shade Rack	45¢
Tackle Block—See Blocks	
Moore's Anti-Friction 5 in. Wheel	40¢
dos, \$12.00	40¢
Shepard's Acme, No. 35	60¢
Shepard's Niagara, No. 20	60¢

Pumps—

Cistern, Best Makers	60¢@60¢@10¢
Pitcher Spout, Best Makers	70¢@70¢
Pitcher Spout, Cheaper G'ds	75¢@75¢@10¢

Punches—

Saddler's or Drive, good	dos, 60¢@55¢
Bemis & Call Co.'s Cast Steel Drive	50¢@55¢
Bemis & Call Co.'s Springfield Socket	50¢@55¢
Spring, good quality	dos, \$2.50@2.60
Spring, Leach's Pat.	15¢
Bemis & Call Co.'s Spring and Check	40¢
Solid Timmer's, P., S. & W. Co.	dos, 55¢
Timmer's Hollow Punches, P., S. & W. Co.	20¢@25¢
Rice Hand Punches	15¢
Avery's Revolving	40¢
Avery's Sawset and Punch—See Sawsets	

Rail—

Sliding Door, Wrt Brass	dos, 85¢, 40¢
Sliding Door, Bronzed Wrt Iron	dos, 7¢, 7¢
Sliding Door, Iron, Painted	dos, 4¢, 40¢
Barn Door, Light	dos, 2.50 2.50 3.10, 10¢
Per 100 feet	Small. Med. Large.
B. D. for N. E. Hangers	\$3.15 2.70 3.25 Net
Terry's Steel Rail	dos, ft, 4¢
Victor Track Rail, 7¢ per foot	50¢@25¢
Carrier, double braced, Steel Rail	3¢@4¢
Moore's Wrought Iron	25¢
Moody Steel Rail, ft, 5¢	45¢

Rakes—

Cast Steel, Association G'ds	70¢@70¢@2¢
Cast Steel, outside G'ds	70¢@70¢@5¢
Malleable	70¢@70¢@5¢
Gibbs' Lawn Rake	dos, \$4.90
Gibbs' Canton Lawn Rake	dos, \$3.75
Gibbs' Acme Lawn Rake	dos, \$4.75
Gibbs' Favorite Lawn Rake	dos, \$3.90
Gibbs' Crown Lawn Rake, No. 1	dos, \$4.00
Gibbs' Crown Lawn Rake, No. 2	dos, \$5.40
Onelda Lawn Rake	dos, \$6.00
Port Madison Prize Bow Brace and	Peerless
Port Madison Steel Tooth Lawn Rake	\$6.00

Razors—

J. R. Torrey Razor Co.	20%
Wostenholm and Butcher	\$10 to \$20
Jordan's A.A.I. new list	Net
Jordan's Old Faithful	Net
Galvanic	dos, \$15.00
Electric Cutlery Co.	Net
Campbell Cutlery Co.	50%

Razor Straps—**See Straps, Razor.****Rings and Ringers—****Bull Rings—**

Union Nut Co.	55%
Sargent's	75¢@10¢
Hotchkiss' low list	50%
Humason, Beckley & Co.	70¢@10¢
Peck, Stow & W. Co.	50¢@10¢@10¢
Ellrich Hdw. Co., White Metal, low list	50¢@50¢@10¢

Hog—

Top of the Hill Rings	dos \$2.00
Top of the Hill Rings	dos \$1.25
Hill's Improved Ringers	dos \$1.25
Hill's Old Style Ringers	dos \$1.125
Hill's Tongues	dos \$3.00
Hill's Rings	dos bxs \$1.00
Perfect Rings	dos \$2.15@2.25
Perfect Ringers	dos \$2.15@2.25
Blair's Hog Ringers	dos \$2.00
Blair's Hog Ringers	dos \$1.00@1.00
Champion Ringers	dos \$2.25
Champion Ringers	dos \$2.25
Brown's Rings	dos \$2.00
Brown's Rings	dos \$1.15@1.25
Electric Hog Ringers	dos boxes \$1.50
Electric Hog Ringers	dos \$2.00
Major Ringers	dos \$1.25
Major Ringers	dos \$2.00

Rivets and Bars—

Iron, list Nov. 17, '87	60¢@10¢@60¢@10¢
Copper	60¢@10¢
Coppered Iron, Bettina Brand	40%

Rivet Sets—See Sets.**Rods—**

Stair, Brass	25¢@30¢
Stair, Black Walnut	dos 40¢
Rollers—	
Barn Door, Sargent's list	60¢@10¢@10¢
Acme Moore's Anti-Friction	55%
Union Barn Door Roller	70%
Thompson Mfg. Co.'s own Roll'rs	30%

Rope—The following prices are f. o. b., New York or factory, and are shaded 1/4¢@1/4¢ on large lots; terms, 1/4% for cash.

Manila, 7-16 in. diam. and larger	10¢
Manila, 3/4 in. and 5-16 in.	10 1/4¢
Manila, Tarred Rope	9 1/4¢
Manila, Hay Rope	8 1/4¢
Sisal, 7-16 inch and larger	7 1/4¢
Sisal, 3/4 in. and 5-16 in.	8 1/4¢
Sisal, Hay Rope	7 1/4¢
Sisal, Tarred Rope	6 1/4¢
Sisal, Medium Lath Yarn	6 1/4¢
New Zealand, 7-16 in. and larger	6 1/4¢
New Zealand, 3/4 inch, 7	7 1/4¢
New Zealand, 3/4 and 5-16 inch	7 1/4¢
New Zealand, Hay Rope	6 1/4¢
New Zealand, Tarred Rope	6 1/4¢
Cotton Rope	13 1/4¢@16 1/4¢
Jute Rope	6 1/4¢@7 1/4¢

Wire—

List February, 1892. All kinds..... 45%

Rules—

Boxwood	80¢@10¢@10¢
Ivory	50¢@10¢
Starrett's Rules and Straight Edges	25¢@10¢

Sad Irons—See Irons, Sad.**Sand and Emery Paper and Cloth—**

See Paper and Cloth.

Sash Cord—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are generally cut by jobbers.

Disston's Circular	45¢@45¢@5¢
Disston's Cross Cut	45¢@45¢@5¢
Disston's Hand	25¢
Woodrugh & McParlin	
Hand, Panel and Rip	30¢@30¢@5¢
Narrow Champion Cross Cuts with	Handles, 18¢@20¢
Champion Thin Back Cross Cuts	20¢@28¢
Champion Extra Thin Back Cross	Cuts, 20¢@31¢
One Man Champion Cross Cuts	37¢@40¢
Wheeler, Madden & Clemson Mfg. Co.	
Hand, Panel and Rip	35¢@35¢@5¢
Narrow Champion Cross Cuts with	Handles, 18¢@20¢
Champion Thin Back Cross Cuts	20¢@28¢
Champion Extra Thin Back Cross	Cuts, 20¢@31¢
One Man Champion Cross Cuts	37¢@40¢
Atkins' Circular Shingle & Heading	50%
Atkins' Silver Steel Diamond X Cuts	70%
Atkins' Special Steel Dexter X Cuts	50%
Atkins' Special Steel Diamond X Cuts	50%
Atkins' Champion and Electric Tooth	X cuts, foot 30¢
Atkins' Hollow Back X Cuts	foot 20¢
Atkins' Mulay, Mill and Drag	40%
Atkins' One-Man Saw, with handles	foot 40¢
Peace Circular and Mill	45¢@45¢@5¢
Peace Hand Panel and Rip	25¢@25¢@5¢
Peace Cross Cuts	45¢@45¢@5¢
Richardson's Circular and Mill	45¢@45¢@5¢
Richardson's X Cuts	45¢@45¢@5¢
Richardson's Hand, &c.	25¢@25¢@5¢
C. E. Jennings & Co. Hand, Panel	and Rip, 35¢@35¢@10¢

Hack Saws—

Griffin's, complete	40¢@10¢@50¢
Griffin's Hack Saw Blades	40¢@10¢@50¢
Star Hack Saws and Blades	25¢
Eureka and Crescent	25¢

Scroll—

Lester, complete	\$10.00, 25%
Rogers, complete	\$4.00, 25%
Barnes' Builders' and Cab Makers	\$15.25, 25%
Barnes' Scroll Saw Blades	35%

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scales—**

Hatch, Counter, No. 171, good quality	dos \$18.00@19.70
Hatch, Tea, No. 161	dos \$6.50@7.00
Union Platform, Plain	\$2.10@2.20
Union Platform, Striped	\$2.40@2.50
Chatillon's Grocers' Trip Scales	50%
Chatillon's Eureka	25%
Chatillon's Favorite	40%
Family, Turnbills	30¢@30¢
Riehle Bros' Platform	40%

Scale Beams—

See Beams, Scale.

Scissors, Fluting..... 45%**Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)	\$4.00
Box, 1 Handle	dos \$2.25@2.50
Box, 2 Handle	dos \$3.00@3.25
Double Box and Ship	20¢@10¢
Foot	60¢@10¢@60¢
Ship, Common	dos \$3.50 net
Ship, R. I. Tool Co.	10%

Screen Window and Door

Frames—See Frames

Screw Drivers—

See Drivers, Screw

Screws—**Bench and Hand—**

Bench, Iron	55¢@10¢@55¢@10¢
Bench, Wood, Beech	dos \$2.25
Bench, Wood, Hickory	20¢@10¢
Hand, Wood	25¢@10¢@25¢@10¢
Hand, Grand Rapids, list	35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890	75¢@10¢
Coach and Lag, Gimlet Point, list Jan. 1, 1890	75¢@10¢
Hand Rail, Sargent's	70¢@10¢
Hand Rail, H. & B. Mfg. Co.	70¢@10¢@75¢
Hand Rail, Am. Screw Co.	75%

Jack Screws—

Jack Screws, Millers Falls list	50¢@10¢
Jack Screws, P. S. & W.	35%
Jack Screws, Sargent	70%
Jack Screws, Stearns	40¢@40¢@10¢

Cork—

Humason & Beckley Mfg. Co.	40¢@10¢@50%
Williamson's	35¢@33¢@25%

Machine—

Flat Head Iron	65%
Round Head Iron	60%

Wood—

List January 1, 1891.	
Flat Head Iron	70%
Round Head Iron	65%
Flat Head Brass	70% or 10%
Round Head Brass	65% 5% often given.
Flat Head Bronze	70%
Round Head, Bronze	65%
Rogers' Drive Screws	85%

Scroll Saws—See Saws, Scroll.**Scythes—**

Grain..... 40¢@5¢@40¢@10¢

Grass..... 40¢@10¢@50%

Scythe Snaths—

See Snaths, Scythe.

Sets—

Alken's Sets, Awls and Tools	
No. 20, 7¢ dos \$10.00	60¢@60¢@5¢
Fray's Adj. Tool Hdl., No. 1, \$12; 2, \$18; 3, \$12; 4, \$0	45%
Millers Falls Adj. Tool Hdl., No. 1, \$12; 2, \$18	25%
Henry's Combination Haft	dos \$6.50
Stanley's Excelsior	No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50
Common Brad Sets	30¢@10¢
No. 42, \$10.50; No. 43, \$12.50	70¢@10¢@5¢

Nail—

Square	gr. \$4.00@4.25
Round	gr. \$3.25
Buck Bros	27 1/2¢
Cannon's Diamond Point	gr. \$12, 20%

Rivet—

Regular list..... 70%

Saw—

Stillman's Genuine	dos \$5.00@7.75, 40¢@5%
Stillman's Pattern, Hand	dos \$3.25; Cross Cut, \$5.25
Common Lever	dos \$2.00, 45¢@50%
Merrill's No. 1	\$15.00, 40¢@10¢@40¢@10¢@5%
No. 3 and 4	\$18.00, 40¢@5%
No. 5, \$24.00	40¢@5%
Leach's, No. 0, \$8.00; No. 1, \$15	15¢@20%
Nash's	20¢@10¢@20¢@10¢
Hammer, Hotchkiss	\$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat.	30¢@5%

Bemis & Call Co.'s Lever and Spring Hammer	30¢@5%
Bemis & Call Co.'s Plate	10%
Bemis & Call Co.'s Cross Cut	12 1/2%
Alken's Genuine	\$13.00, 50¢@10¢@60%
Alken's Imitation	7¢, 40%
Hart's Pat. Lever	20%
Disston's Star	25%
Leopold	40¢@10¢@50%
Atkins' Lever	dos No. 1, \$6.00
Atkins' Criterion	dos No. 1, \$6.00
Crescent (Keller), No. 1, \$15.00; No. 2, \$24.00	40¢@10¢
Avery's Saw Set and Punch	50%
Kohler's Royal	dos \$7.00
Kohler's Giant Royal	dos \$12.00
Crescent	dos \$3.00
Lloyd's Acme	dos \$15, 40¢@10%
Taintor Positive	dos \$18, 50%

Bemis & Call Co.'s Lever and Spring Hammer	30¢@5%
Bemis & Call Co.'s Plate	10%
Bemis & Call Co.'s Cross Cut	12 1/2%
Alken's Genuine	\$13.00, 50¢@10¢@60%
Alken's Imitation	7¢, 40%
Hart's Pat. Lever	20%
Disston's Star	25%
Leopold	40¢@10¢@50%
Atkins' Lever	dos No. 1, \$6.00
Atkins' Criterion	dos No. 1, \$6.00
Crescent (Keller), No. 1, \$15.00; No. 2, \$24.00	40¢@10¢
Avery's Saw Set and Punch	50%
Kohler's Royal	dos \$7.00
Kohler's Giant Royal	dos \$12.00
Crescent	dos \$3.00
Lloyd's Acme	dos \$15, 40¢@10%
Taintor Positive	dos \$18, 50%

Bemis & Call Co.'s Lever and Spring Hammer	30¢@5%
Bemis & Call Co.'s Plate	10%
Bemis & Call Co.'s Cross Cut	12 1/2%
Alken's Genuine	\$13.00, 50¢@10¢@60%
Alken's Imitation	7¢, 40%
Hart's Pat. Lever	20%
Disston's Star	25%
Leopold	40¢@10¢@50%
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Kohler's Royal	dos \$7.00
Kohler's Giant Royal	dos \$12.00
Crescent	dos \$3.00
Lloyd's Acme	dos \$15, 40¢@10%
Taintor Positive	dos \$18, 50%

Bemis & Call Co.'s Lever and Spring Hammer	30¢@5%
Bemis & Call Co.'s Plate	10%
Bemis & Call Co.'s Cross Cut	12 1

Snaps Harness &c.

Anchor (T. & S. Mfg. Co.)	55%
Fitch's (Bristol)	50&10%
Hotchkiss	10%
Andrews	50%
Gorman's Patent Guarded	70&10&10%
Gorman, new list	40&10%
Covert	50&10&5&2%
Covert, New Patent	50&10&5&2%
Covert, New R. E.	60&10&5&2%
Covered Spring	60&10&10%
Covert's Saddlery Works' Triumph	33&4%

Snaths, Scythe-

List	50&50&5%
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Soldering Irons-See *Irons, Soldering.***Spittoons, Cuspidors, &c.**Standard Fiberglass—
Cuspidors, 8 1/2 inch, # doz., No. 5, 8; No. 5X, 8.

Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 8.

Spoke Shaves-See *Shaves, Spoke.***Spoke Trimmers-**See *Trimmers, Spoke.***Spoons and Forks-**

Tinned Iron—

Gasting, Cen. Stamp. Co.'s list	70&10%
Gold Table and Tea, Cen. Stamp. Co.'s list	70&10%
Buffalo, S. S. & Co.	33&4&2%

Silver Plated-

months or 5% cash 30 days:	
Meriden Brit. Co., Rogers	40&15%
C. Rogers & Bros.	40&15%
Rogers & Bros.	40&15%
Reed & Barton	40&15%
Wm. Rogers Mfg. Co.	40, 15&5%
Simpson, Hall, Miller & Co.	40, 15&5%
Holmes & Edwards Silver Co.	40, 15&5%
L. Boardman & Son	50&12&4%

Miscellaneous-

Holmes & Edwards Silver Co.	
No. 87 Mexican Silver	50&10&5%
No. 30 Silver Metal	50&10&5%
No. 24 German Silver	50&10&5%
No. 50 Nickel Silver	50&5%
No. 49 Nickel Silver	50&10&5%
Wm. Rogers Mfg. Co.	
18% Rogers' Silver Metal	50&10&5%
18% Rogers' German Silver	50&5%
22% Rogers' Nickel Silver	50&5%
German Silver	50&50&5%
German Silver, Hall & Elton	50&5% cash
Nickel Silver	50&50&50&10&5% cash
Britannia	50&50&5%
Boardman's Nickel Silver, list July 1, 1891	60&7&4&5%
Boardman's Britannia Spoons, case lots	60&5% cash

Springs-

Door—

Torrey's Rod, 30 in.	# doz \$1.20&1.25
Gray's	# gr. \$2.00
Bee Rod	# gr. \$2.00
Warner's No. 1	# doz \$1.50; No. 2, \$3.40
Gem (Coll), list April 19, 1896	10&15%
Star (Coll), list April 19, 1896	20&20&5%
Victor (Coll)	60&10&50&10&5%
Champion (Coll)	60&10&50&10&5%
Cowell's, No. 1	# doz \$18.00; No. 2, \$15.00
Rubber, complete	# doz \$4.50
Hercules	50&50&10%

Carriage, Wagon, &c.

Millipede, Concord, Platform and Half	
Acroll	60&10&10%
Cliff's Bolster Springs	25%

Squares-

Steel and Iron	
Nickel-Plated	85&85&5%
Try Square and Bevels	60&10&10%
Diston's T. Square and Bevels	50%
Winterbottom's Try and Miter	30&10%
Starrett's Micrometer Calliper Squares	25%
Avery's Flush Bevel Squares	40%
Avery's Bevel Protractor	50%

Squeezers-

Fodder—

Blair's	# doz \$2.00
Blair's "Climax"	# doz \$1.25

Lemon-

Porcelain Lined, No. 1	# doz \$6.00
Wood, No. 2	# doz \$3.00, 35%
Wood, Common	# doz \$1.70&1.75
Dunlap's Improved	# doz \$3.75, 30%
Sammis	No. 1, \$5.00; No. 2, \$4.12
Jennings' Star	# doz \$2.50
The Boss	# doz \$2.50
Dean's, Nos. 1, 2	# doz \$6.50; 2, \$5.35; 3, \$1.00; Queen, \$2.50
Little Giant	50&50&5%
King	40&5%
Hotchkiss Straight Flash	# doz \$12.00
Silver & Co., Glass	# gro. \$9.00
Manny Lemon Juice Extractor	# doz \$0.75&\$1.00
Improved	# doz \$2.00

Standard Fiber Ware-See *Ware, Standard Fiber.***Staples-**

Blind—

Barbed, 1/4 in. and larger	# 7&7&4%
Barbed, 1/4 in.	# 8&8&4%
Fence Staples, Galvanized	Same price
Fence Staples Plain	See Trd. Rep

Steelyards**Stocks and Dies-**

Blacksmith's:	
Waterford Goods	35%
Butterfield's Goods	35%
Lightning Screw Plate	25&30%
Reece's New Screw Plates	25&30%
Reversible Ratchet	30%
Gardner	25%
Ken River	25&30%

Stops, Bench-

Morrill's	# doz \$9, 50%
Hotchkiss's	# doz \$5, 10&10&10%
Weston's, No. 1, \$10; No. 2, \$9, 25&10&25%	
McGill's	# doz \$3, 10%
Cincinnati	25&10%
Terrell's Nos. 1 and 2, # doz, \$3; No. 3, \$3.60	30%

Stone-Stones, Grind—See *Grindstones.***Scythe Stones-**

Pike Mfg. Co., list April, 1892.....\$34%

Cleveland Stone Co., list Nov. 1892.....33&4%

Oil Stones, &c.

Pike Mfg. Co.:	
Hindostan No. 1, # doz.....8¢	
Sand Stone.....5¢	40 @ 40¢
Turkey Oil Stone to 8 in.....10¢	
Turkey Slips.....\$2.00	
Washita Stone, Extra.....50¢	
Washita Stone, No. 1.....40¢	
Washita Stone, No. 2.....50¢	
Washita Stone, Extra.....80¢	
Washita Slips, No. 1.....70¢	
Arkansas Stone, No. 1, 3 to 5 1/2 in., \$2.80	
Arkansas Stone, No. 1 1/2 to 8 in.....\$3.50	
Lake Superior.....13¢	
Lake Superior Slips.....20¢	

Stove Polish-See *Polish, Stove.***Stretchers, Carpet-**

Cast Steel, Polished.....# doz \$2.2	
Cast Iron, Steel Points.....# doz \$7.50&8.00	
Socket.....# doz \$1.75	
Bullard's.....25&25&10%	

Strops, Razor-

Genuine Emerson.....60&60&5%	
Imitation.....# doz \$2.00, 20&10&5%	
Torrey's.....20%	
Badger's Belt and Com.....# doz \$2.00	
Lamont Combination.....# doz \$4.00	
Jordan's Pat. Padded, list Nov. 1, '89.....\$2.00	
Electric Cutlery Co.....Net	
Campbell Cutlery Co.....Net	

Stuffer, Sausage-

Miles' Challenge, # doz \$20.....50&50&5%	
Perry.....# doz, No. 1, \$15.00; No. 0, \$21.00	
Draw Cut No. 4, each \$30.00.....50&50&10%	
Enterprise Mfg. Co.....30%	
Silver's.....40&10%	

Sweepers, Carpet and Lawn-

Bissell No. 5.....# doz \$17.00	
Bissell No. 8.....# doz \$20.00	
Bissell, Grand.....# doz \$36.00	
Standard.....# doz \$24.00	
Domestic, No. 2.....# doz \$21.00	
Domestic, No. 2.....# doz \$22.00	
Grand Rapids.....# doz \$24.00	
Crown Jewel, No. 1, \$18.00; No. 2, \$19.00; No. 3, \$20.00	
Improved Parlor Queen.....# doz \$15.00	
Nickel.....# doz \$27.00	
Jannet.....# doz \$24.00	
Excelsior.....# doz \$22.00	
Garland.....# doz \$18.00	
Parlor Queen.....# doz \$24.00	
Housewife's Delight.....# doz \$15.00	
Queen.....# doz \$24.00	
Queen, with basket.....# doz \$18.00	
King.....# doz \$30.00	
Web, Improved.....# doz \$18.00	
Hub.....# doz \$16.00	
Cog-Wheel.....# doz \$16.00	
Ladies' Friend.....# doz \$15.00	
Ladies' Friend No. 2.....# doz \$15.00	
Advance.....# doz \$18.00	
Our Leader.....# doz \$19.00	
Triumph.....# doz \$20.00	
Goshen.....# doz \$21.00	
Supreme.....# doz \$22.00	
Easy.....# doz \$22.00	
Gilt Edge.....# doz \$24.00	
Acme.....# doz \$26.00	
Imperial.....# doz \$26.00	
Grand Republic.....# doz \$30.00	
Banner.....# doz \$22.00	
The Star.....# doz \$21.00	
Reliable.....# doz \$22.00	
The Rapid.....# doz \$22.00	
Our Own.....# doz \$27.00	
Model.....# doz \$27.00	
Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:	
5 dozen in 6 months.....# doz \$1.00	
10 dozen in 6 months.....# doz \$2.00	
25 dozen in 6 months.....# doz \$3.00	
Except on L.F. when 10 dozen price is \$13.50, and 25 dozen \$13.00.	

Lawn-

Thompson Mfg. Co.....30%	
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Tacks, Brads &c.

List October 19, 1889. Old established straight weights. Short weight goods are sold at lower prices.

Carpet Tacks:	
American, Blue.....60&5%	
American, Tin'd and Cop'd.....70%	
Steel, Bright and Blue.....60&5%	
Steel, Tinned and Coppered.....70%	
Swedes Iron, Blue.....72&5%	
Swedes Iron, Tinned.....75%	
Swedes Iron Tacks.....60&5%	
S. S., Blue.....60&5%	
S. S., Tinned.....70%	
Lanc., Blue.....55%	
Lanc., Tinned.....60%	
Gimp and Lace Tacks.....62&5%	
S. S., Tinned.....60&5%	
Lanc., Blue.....55%	
Lanc., Tinned.....60%	
Basket and Trimmers' Tacks.....52&5%	
Lanc.....60%	
S. S.....60%	
Hungarian Nails.....60%	
Common and Patent Brads.....55%	
Leathered Tacks.....10%	
Brush Tacks, S. S.....90%	
Looking Glass Tacks, S. S.....35%	
Picture-Frame Points, S. S.....35%	
Finishing Nails.....90%	
Trunk and Clout Nails.....62&5%	
Black.....62&5%	
Tinned or Coppered.....60&5%	
Basket Nails.....90%	
Chair Nails.....62&5%	
Cigar Box Nails.....45%	
Tin Capped Nails.....50%	

Miscellaneous-

Double Point.....90&90&10%	
Wire Carpet Nails.....50&10%	
Plymouth Rock Steel Carpet Tacks.....25%	
Upholsterers' Nails.....40%	

Wire Brads and Nails-

Steel-Wire Brads, R. & E. Mfg. Co.'s list	50&10%
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See also *Nails, Wire.***Tapes, Measuring-**

American.....40&40&5%	
Spring.....40%	
Chesterman's, Regular list.....25&30%	

Thermometers-

Tin Case.....80&80&10%	
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Thimble Skeins-See Skeins.**Ties, Bale-Steel.**

Standard Wire, list.....50&10&5%	
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Tinners' Shears, &c.See *Shears, Tinners' &c.***Tinware-**

Stamped, Jannet and Pieced, list Jan 20, 1887.....70&10&70&25%	
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Tire Benders, Upsetters, &c.-See Benders and Upsetters, Tire.**Tobacco Cutters-**See *Cutters, Tobacco.***Tools-****Coopers'-**

Bradley's.....20%	
Barton's.....20&20&5%	
L. & J. White.....20&5%	
Albertson Mfg. Co.....25%	
Beatty's.....30%	
Sandusky Tool Co.....30&30&5%	
Shaves Cincinnati Tool Co.....20%	

Lumber-

Ring Peavies, "Blue Line".....# doz \$20.00	
Ring Peavies, Common.....# doz \$18.00	
Steel Socket Peavies.....# doz \$21.00	
Mail Iron Socket Peavies.....# doz \$19.00	
Can Hooks, "Blue Line".....# doz \$16.00	
Can Hooks, Common Finish.....# doz \$14.00	
Can Hooks, Mail Socket Clasp, "Blue Line" Finish.....# doz \$14.50	
Can Hooks, Clip Clasp, Common Finish.....# doz \$12.00	
Can Hooks, Clip Clasp, Common Finish.....# doz \$12.00	
Hand Spikes.....# doz 6 ft., \$15.00; 8 ft., \$20.00	
Pike Poles, Pike & Hook.....# doz, 12 ft., \$12.50; 14 ft., \$12.50; 16 ft., \$14.50; 18 ft., \$17.50; 20 ft., \$21.50	
Pike Poles, Pike only.....# doz, 12 ft., \$10.00; 14 ft., \$11.00; 16 ft., \$13.00; 18 ft., \$16.00; 20 ft., \$20.00	
Pike Poles, not ironed.....# doz, 12 ft., \$9.00; 14 ft., \$7.00; 16 ft., \$9.00; 18 ft., \$12.00; 20 ft., \$16.00	
Setting Poles.....# doz, 12 ft., \$14.00; 14 ft., \$15.00; 16 ft., \$17.00	
Swamp Hooks.....# doz \$18.00	

Saw-

Atkins' Perfection.....# doz \$12.00	
Atkins' Excelsior.....# doz \$6.00	
Atkins' Giant.....# doz \$4.00	

Transom Lifters-See *Lifters, Transom.***Traps-****Game-**

Newhouse.....40&40&5%	
Oneida Pattern.....70&10%	
Game, Blake's Patent.....40&10&5%	

Mouse and Rat-

Mouse Wood, Choker.....# doz holes, 9&10¢	
Mouse, Round Wire.....# doz \$1.50	
Mouse, Cage, Wire.....# doz \$2.50	
Mouse, Catch-em-alive.....# doz \$2.50	
Mouse, Bonanza.....# doz 0.90&\$1.00	
Rat, Decoy.....# gr \$10.00, 10¢	
Ideal.....# gr \$10.00	
Hotchkiss Metallic Mouse, 5-hole traps.....# doz, 75¢; in full cases, # doz \$6.00&6.5¢	
Hotchkiss Imp. Rat Killer.....# gro \$18.50	
Hotchkiss New Rat Killer.....# gro \$16.50	
Schuyler's Rat Killer.....# gro \$15.00	
Dandy.....# doz, \$1.75; # gro, \$16.00	

Triers-

Butter and Cheese.....25%

Trimmers, Spoke-

Bonney's.....# doz \$10.00, 50%	
Stearns'.....20&10%	
Ives', No. 1, \$15.00; No. 2, \$12.00 # doz.....55&10%	
Douglas'.....# doz \$9.00, 20%	
Cincinnati.....25%	

Trowels-

Lothrop's Brick and Plastering.....20&10&5&5%	
Reed's Brick and Plastering.....15%	
Diston's Brk' and Plastering.....25&25&5%	
Peace's Plastering.....25&25&5%	
Clement & Maynard's.....20&20&5%	
Rose's Brick.....15&20%	
Brade's Brick.....25%	
Worrall's Brick and Plastering.....20%	
Garden.....70%	
Cleves' Angle Trowel, # gro, No. 1, \$36; No. 2, \$30; No. 3, \$15. net @ 10%	

Trucks, Warehouse, &c.

B. & L. Block Co.'s list.....40%	
Thompson Mfg. Co.....25%	

Tubes, Boiler-See *Pipe.***Twine-**

Flax Twine:		BC.	B.
No. 9, 1/4 and 1/2 B Balls.....25¢	81¢		
No. 12, 1/4 and 1/2 B Balls.....22¢	30¢		
No. 18, 1/4 and 1/2 B Balls.....20¢	30¢		
No. 24, 1/4 and 1/2 B Balls.....20¢	29¢		

Washers—
size hole..... 5-16 3/4 1/2 1/4 to 1 1/2
Washers..... 5 1/4 4 3/4 3 1/2 2 3/4
In lots less than 200 lb. 5 lb. add 1/4 lb. 5-lb
boxes 14 to list.
Washer Cutters—
See Cutters, Washers.
Wedges—
Iron..... 7 lb 3 1/4 lb
Steel..... 7 lb 3 1/4 lb
Weights, Sash—
Sash..... 7 lb 3 1/4 lb
Well Buckets Galvan-
ized—See Buckets, Well, Gal-
vanized.
Wheels, Well—
8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25
Wire and Wire Goods—
Iron—
Market.
Br. & Ann., Nos. 0 to 18.....
75¢ to 75¢ 10¢ 5¢
Cop'd, Nos. 0 to 18, 75¢ 5¢
Galv., Nos. 0 to 18.....
70¢ 5¢ 70¢ 10¢
Tin'd, Tin'd, Nos. 0
to 18..... 70¢ 70¢ 10¢

Stone.
Br. and Ann'd, Nos. 16
to 18..... 80¢
Bright and Ann'd, Nos.
19 to 26..... 80¢ 5¢
Br. and Ann'd, Nos. 27
to 36..... 82¢ 5¢
Tin'd..... 82¢ 5¢
Tinned Broom Wire, 18 to 21, 75¢ 4¢
Galvanized Fence..... 75¢ 10¢
Brass, list Jan. 18, 1893..... 40¢ 5¢
Copper, list Jan. 18, 1893..... 40¢ 5¢
Annealed Wire on Spools..... 60¢
Mallin's Steel and Tin'd on Spools..... 60¢
Mallin's Brass and Cop. on Spools..... 50¢
Tate's Spooled, Tin'd & Annealed..... 60¢ 5¢
Tate's Spooled Cop. and Brass..... 50¢
Cast Steel Wire..... 50¢
Stub's Steel Wire..... 60¢ 70¢
Steel Music Wire, 12 to 30, imported.....
60¢ 70¢
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.
Bright Wire Goods—
Standard list..... 80¢ 20¢ 85¢

Wire Cloth and Netting—
Painted Screen Cloth, good quality,
100 sq. ft., \$1.40
Galvanized Wire Netting..... 75¢ 75¢ 10¢
Wire, Barb—
See Trade Report.
Wire Rope—See Rope, Wire.
Wrenches—
American Adjustable..... 40¢
Baxter's Adjustable "S"..... 40¢ 10¢ 50¢
Baxter's Diagonal..... 30¢
Coes' Genuine..... 50¢ 35¢
Coes' "Mechanics"..... 50¢ 10¢ 35¢
Girard Standard..... 65¢ 10¢ 70¢
Lamson & Sessions' Engineers..... 60¢ 10¢
Lamson & Sessions' Standard..... 70¢ 10¢
Girard Agricultural..... 75¢ 10¢ 80¢
Lamson & Sessions' Agric'l.....
Bemis & Call's:
Pat. Combination..... 40¢
Merrick's Pattern..... 35¢
Briggs' Pattern..... 25¢
Cylinder or Gas Pipe..... 40¢ 5¢
No. 3 Pipe..... 50¢

Aiken's Pocket (Bright)..... \$6.00, 50¢ 10¢
The Favorite Pocket..... \$4.00, 40¢
Webster's Pat. Combination..... 35¢
Boardman's..... 35¢
Always Ready..... 50¢
Alligator..... 50¢
Donohue's Engineer..... 20¢ 10¢
Acme, Bright..... 50¢ 25¢
Acme, Nickle'd..... 40¢ 25¢
Hercules..... 70¢ 70¢ 55¢
Walker's..... 55¢ 25¢
Diamond Steel..... 55¢ 25¢
Cincinnati Brace Wrenches..... 25¢ 10¢
Taft's Vise Wrench..... 55¢ 10¢ 35¢

Wringers, Clothes

Am. Wringer Co.'s list, Jan. 2, '93, 25¢ cash
Colby Wringer Co., list Sept. 1, '91, 25¢ cash
Lovell Mfg. Co., list Jan. 1, 1892, 25¢ cash
Peerless Mfg. Co., list Feb. 1892, 25¢ cash
National Wringer & Mfg. Co., list
June 1, 1892, 25¢ cash

Wrought Goods

Staples, Hooks, &c., list March 17, 1893
85¢ 10¢ 85¢ 30¢

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable
Oils—
Linsed, City, raw, per gal. 48
Linsed, City, boiled, 51
Linsed, Western, raw, 48
Lard, City, Extra Winter, 92
Lard, City, Prime, 90
Lard, City, No. 1, 88
Lard, City, No. 2, 85
Lard, Western, prime, 88
Cotton-seed, Crude, prime, 43
Cotton-seed, Crude, off
grades, 42
Cotton-seed, Summer Yel-
low, prime, 47
Cotton-seed, Summer Yel-
low, off grades, 42
Sperm, Crude, 72
Sperm, Natural Spring, 68
Sperm, Bleached Spring, 73
Sperm, Natural Winter, 74
Sperm, Bleached Winter, 78
Whale, Crude, 40
Whale, Natural Winter, 52
Whale, Bleached Winter, 55
Whale, Extra Bleached, 57
Sea Elephant, Bleached
Winter, 34
Menhaden, Crude, Sound, 34
Menhaden, Crude, Southern
Menhaden, Light Pressed, 37
Menhaden, Bleached W'ter, 43
Menhaden, Extra Bleached, 45
Tallow, City, prime, 50
Tallow, Western, prime, 45
Cocoanut, Ceylon, 54
Cocoanut, Cochin, 6
Cod, Domestic, 38
Cod, Foreign, 42
Red Elaine, 37
Red Saponified, 5
Bank, 36
Straits, 37
Olive, Italian, bbls, 68
Neatfoot, prime, 50
Palm, prime, Lagos, 54
Mineral Oils—
Black, 29 gravity, 25 to 30
cold test, per gal. 7
Black, 29 gravity, 15 cold
test, 7 1/2
Black, 29 gravity, summer, 6
Cylinder, light, filtered, 14

Cylinder, dark, filtered, 10
Paraffine, 23 1/2 to 24 gravity, 11 1/2
Paraffine, 25 gravity, 10
Paraffine, 28 gravity, 7 1/2
Paraffine, red, 11 1/2
Paints and Colors—
Barytes, Foreign, 10 ton, \$22.00 @24.00
Barytes, Amer. floated, 29.00 @32.00
Barytes, Amer. No. 1, 16.00 @18.00
Barytes, Amer. No. 2, 13.00 @15.00
Barytes, Amer. No. 3, 11.00 @12.00
Blue, Celestial, 6
Blue, Chinese, 40
Blue, Prussian, 25
Blue, Ultramarine, 8
Brown, Spanish, 3 1/2
Brown, Vandyke, Amer., 3
Brown, Vandyke, English, 3
Carmine, No. 40, in bulk, 3.10 @
Carmine, No. 40, in boxes
or barrels, 3.20 @
Carmine, No. 40, in ounce
bottles, 4.20 @
Chalk, in bulk, 100 lb., 1.75
Chalk, in bbls., 100 lb., 35
China Clay, English, 13.00 @18.00
Cobalt Oxide, prep'd, 9.00 @11.00
Cobalt Oxide, black,
lots 100 lb., 1.00 @
Cobalt Oxide, black,
less 100 lb., 1.05 @
Green, Paris, in bulk, 10 @ 12 1/2
Green, Paris, 170 to 175 lb.
kegs, 11 @ 13
Green, Paris, small pack, 12 @ 19
Green, Chrome, ordinary, 8 @ 12
Green, Chrome, pure, 22 @ 25
Lead, Eng., B.B. white, 8 1/2 @ 10
Lead, Amn. White, dry or in oil:
Kegs, lots less than 500 lb., 7 @ 7 1/2
Kegs, lots 500 lb. to 5 tons, 6 1/2 @ 6 3/4
Kegs, lots 5 tons to 12 tons, 6 1/2 @ 6 3/4
Kegs, lots 12 tons and over, 6 1/2 @ 6 3/4
Lead, White, in oil, 25 lb. tin
pails, add to keg price, @ 1
Lead, White, in oil, 1 to 5 lb. as-
sorted tins, add to keg price, @ 2 1/2
Lead, Red, bbls, and 1/2 bbls, 6 @ 7
Lead, Red, kegs, 6 1/2 @ 7 1/2
Litharge, kegs, 6 1/2 @ 7 1/2
Litharge, bbls, and 1/2 bbls, 6 @ 7

TERMS, &c.—Lead and Litharge.—On
lots of 500 lb. or over, 60 days' time or 2 1/2
% discount for cash if paid within 15 days
of date of invoice.
Ocher, French Washed, 1.35 @ 1 1/4
Ocher, German Washed, 1 1/4 @ 1 1/2
Ocher, American, 1 1/4 @ 1 1/2
Orange Mineral, English, 8 1/2 @ 9
Orange Mineral, French, 10 @ 10 1/2
Orange Mineral, German, 8 1/2 @ 9
Orange Mineral, American, 8 1/2 @ 9
Paris White, English Cliff-
stone, 1.00 @ 1.15
Paris White, American, 65 @ 75
Red, Indian, English, 5 1/2 @ 7
Red, Indian, American, 2 @ 6 1/2
Red, Turkey, 9 @ 11
Red, Tuscan, 9 @ 11
Red, Venetian, American,
100 lb., 1.00 @ 1.10
Red, Venetian, English, 1.20 @ 1.35
Sienna, Italian, Burnt and
Powd., 4 @ 5
Sienna, Ital., Burnt Lumps, 1 1/4 @ 3 1/4
Sienna, Ital., Raw, Powd., 4 1/2 @ 5 1/2
Sienna, Ital., Raw, Lumps, 1 1/4 @ 3 1/4
Sienna, American, Raw, 1 1/4 @ 1 1/2
Sienna, American, Burnt and
Powdered, 1 1/4 @ 1 1/2
Talc, French, 1 1/4 @ 1 1/2
Talc, American, 1 1/4 @ 1 1/2
Terra Alba, Fr'ch., 100 lb. 95 @ 1.25
Terra Alba, English, 70 @ 80
Terra Alba, American No. 1 65 @ 75
Terra Alba, American No. 2 45 @ 50
Umber, Turkey, Burnt and
Powdered, 3 1/4 @ 4
Umber, Turkey, Bnt. La., 2 1/4 @ 3
Umber, Turkey, Raw and
Powdered, 3 1/4 @ 4
Umber, Turkey, R'w Lumps, 2 1/4 @ 3
Umber, Turkey, Bnt. Amer., 1 1/4 @ 1 1/2
Umber, Turkey, R'w Amer., 1 1/4 @ 1 1/2
Yellow, Chrome, 10 @ 25
Vermilion, American Lead, 11 1/4 @ 12
Vermilion, Quicksilver, bulk, 57 @
Vermilion, Quicksilver, bags, 58 @
Vermilion, Quicksilver sm'r
pkgs., 62 @
Vermilion, English Import, 85 @ 90
Vermilion, English, Eng., 8 @ 35
Vermilion, Trieste, 92 1/2 @ 95
Vermilion, Chinese, 37 1/2 @ 42 1/2
Whiting Common, 100 lb. 45 @ 55
Whiting Gliders, 45 @ 55

Zinc, American, dry, 4 1/2 @ 5
Zinc, French, Red Seal, 7 1/2 @
Zinc, French, Green Seal, 9 @
Zinc, French, V. M. X., 7
Zinc, Antwerp, Red Seal, 7 1/2 @
Zinc, Antwerp, Green Seal, 7 1/2 @
Zinc, German, L. Z. O., 6 1/2 @ 7 1/2
Zinc, V. M. in Poppy Oil, G.
Seal, lots of 1 ton and
over, 10 1/2 @ 11 1/2
lots less than one ton, 11 @ 11 1/2
Zinc, V. M. in Poppy Oil,
Red Seal,
lots of 1 ton and over, 10 @ 10 1/2
lots of less than 1 ton, 10 1/2 @ 10 1/2
Discounts.—French Zinc.—Discounts to
buyers of 10 bbl. lots of one or assorted
grades, 15¢; 25 bbls., 2¢; 50 bbls., 4¢. No
discount allowed on less than bbl. lots.
Colors in Oil—
Black, Drop, Frankfort, 25 @ 30
Black, Drop, English, 12 @ 15
Black, Drop, Domestic, 7 @ 10
Black, Lampblack, Best, 20 @ 35
Black, Lampblack, Common, 7 @ 15
Black, Ivory, 8 @ 15
Blue, Chinese, 35 @ 40
Blue, Prussian, 20 @ 45
Blue, Ultramarine, 12 @ 15
Brown, Vandyke, 7 @ 15
Green, Chrome, 16 @ 18 1/2
Sienna, Raw, 7 @ 14
Sienna, Burnt, 7 @ 14
Umber, Raw, 7 @ 10
Umber, Burnt, 7 @ 10
Putty—
In barrels and 1/2 bbls,01 1/2 @ .01 1/2
In tubs,01 1/2 @ .01 1/2
In tin cans,01 1/2 @ .02 1/2
In bladders,01 1/2 @ .02 1/2
Spirits Turpentine—
In regu bbls, 30 1/2 @
In machine bbls, 31 @
Glue—
Low Grade, 8 @ 10
Cabinet, 13 @ 14
Medium White, 13 @ 15
Extra White, 17 @ 20
French, 10 @ 25
English, 10 @ 25
Irish, 12 @



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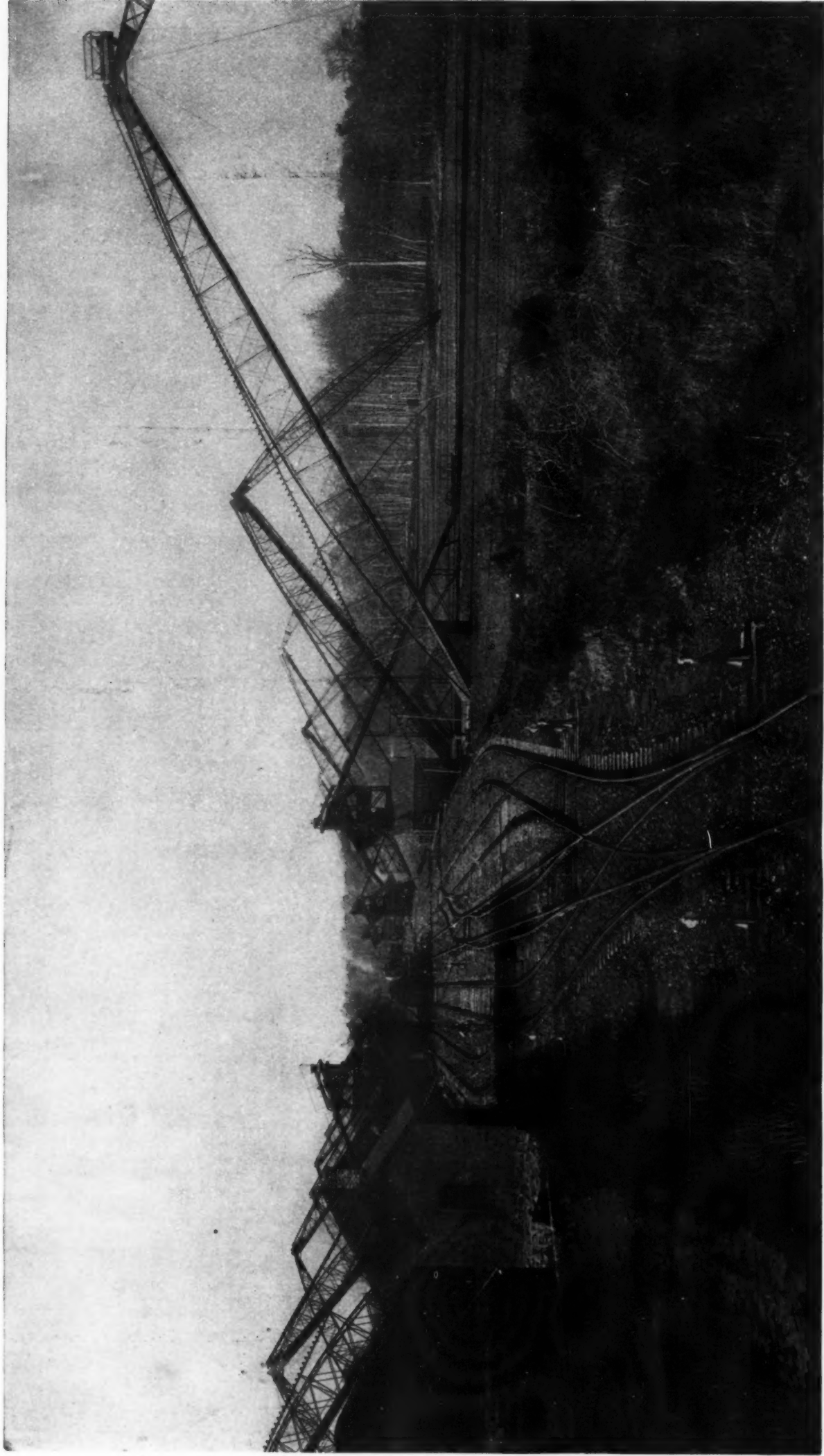
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GENERAL VIEW OF THE SOUTH PLAINFIELD COAL STORAGE PLANT.

BUILT BY THE DODGE COAL STORAGE COMPANY FOR THE LEHIGH VALLEY COAL COMPANY.